WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan

May 2023

Revision 1

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1 INTRODUCTION

1.1 Overview

The Scarborough gas resource, located in Commonwealth waters approximately 375 km west-northwest of the Burrup Peninsula, forms part of the Greater Scarborough gas fields, comprising the Scarborough, Thebe and Jupiter gas fields. Woodside Energy Scarborough Pty Ltd (Woodside), as Titleholder under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) (referred to as the Environment Regulations), proposes to undertake the following petroleum activities as described in Section 3, within Permit Area WA-61-L and WA-62-L:

- installation of subsea infrastructure
- gravimetry surveys
- installation of floating production unit (FPU) moorings
- Inspection, Monitoring, Maintenance and Repair (IMMR) activities for installed infrastructure.

These activities will hereafter be referred to as the Petroleum Activities Program and form the scope of this Environment Plan (EP).

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

The Petroleum Activities Program as defined in this EP is a part of the Scarborough Offshore Project Proposal (OPP) accepted by NOPSEMA on 30th March 2020.

1.2 Defining the Petroleum Activity

The Petroleum Activities Program to be undertaken within Permit Area WA-61-L and WA-62-L comprises petroleum activities, subsea installation, as defined in Regulation 4 of the Environment Regulations.

1.3 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; and
- the Petroleum Activities Program is performed in a manner consistent with the principles of ecologically sustainable development (as defined in Section 3A of the *Environment Protection and Biodiversity Conservation Act, 1999* (Cth) (EPBC Act)).

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

The EP defines activity-specific Environmental Performance Outcomes (EPOs), environmental performance standards (EPSs) and measurement criteria (MC). These form the basis for monitoring, auditing and management of the Petroleum Activities Program to be undertaken by Woodside and its contractors. The implementation strategy (derived from the decision support framework tools)

specified within 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.

1.4 Scope of the Environment Plan

The scope of this EP covers the activities that define the Petroleum Activities Program, as described in **Section 3**. The spatial boundary of the Petroleum Activities Program has been described and assessed using two 'areas', the Operational Area and the Permit Area. The combination of the Operational Area and Permit Area defines the spatial boundary (Petroleum Activity Area or PAA) of the Petroleum Activities Program (PAP), as described, risk-assessed and managed by this EP.

This EP addresses potential environmental impacts from planned activities within the Operational Area and any potential unplanned events that originate from the activity within the Operational Area.

Transit to and from the PAA by vessels as well as port activities associated with these vessels, are not within the scope of this EP. Vessels supporting the petroleum activities operating outside the Operational Area (e.g. transiting to and from port) are subject to all applicable maritime regulations and other requirements and are not managed by this EP.

1.5 Environment Plan Summary

An EP summary will be prepared based on the material provided in this EP, addressing the items listed in **Table 1-1** as required by Regulation 11(4).

Table 1-1: EP Summary

EP Summary material requirement	Relevant section of EP containing EP Summary material
The location of the activity	**Section 3.4**
A description of the receiving environment	**Section 4**
A description of the activity	**Section 3.0**
Details of the environmental impacts and risks	**Section 6**
The control measures for the activity	**Section 6.3**
The arrangements for ongoing monitoring of the titleholder's environmental performance	**Section 6**
Response arrangements in the oil pollution emergency plan	**Section 7.9**
Consultation already undertaken and plans for ongoing consultation	**Section 5**
Details of the titleholders nominated liaison person for the activity	**Section 1.8**

1.6 Structure of the Environment Plan

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

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

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
Regulation 10A(a): *Is appropriate for the nature and scale of the activity*	Regulation 13: *Environmental assessment*	The principle of 'nature and scale' is applicable throughout the EP.	
	Regulation 14: *Implementation strategy for the environment plan*		

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
	Regulation 16: *Other information in the environment plan*		**Section 2** **Section 3** **Section 4** **Section 5** **Section 6** **Section 7**
Regulation 10A(b): *Demonstrates that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable* Regulation 10A(c): *Demonstrates that the environmental impacts and risks of the activity will be of an acceptable level*	Regulation 13(1)–13(7): *13(1) Description of the activity* *13(2)(3) Description of the environment* *13(4) Requirements* *13(5)(6) Evaluation of environmental impacts and risks* *13(7) Environmental Performance Outcomes and standards* Regulation 16(a) to 16(c): *A statement of the titleholder's corporate environmental policy* *A report on all consultations between the titleholder and any relevant person*	• Set the context (activity and existing environment). • Define 'acceptable' (the requirements, the corporate policy, relevant persons). • Detail the impacts and risks. • Evaluate the nature and scale. • Detail the control measures – ALARP and acceptable.	**Section 1** **Section 2** **Section 3** **Section 4** **Section 5** **Section 6** **Section 7**
Regulation 10A(d): *Provides for appropriate Environmental Performance Outcomes, environmental performance standards and measurement criteria*	Regulation 13(7): *Environmental Performance Outcomes and standards*	• Environmental Performance Outcomes (EPO). • Environmental performance standards (EPS). • Measurement criteria (MC).	**Section 6**
Regulation 10A(e): *Includes an appropriate implementation strategy and monitoring, recording and reporting arrangements*	Regulation 14: *Implementation strategy for the environment plan*	Implementation strategy, including: • Environmental Management System (EMS) • Performance monitoring • Oil Pollution Emergency Plan (OPEP – per **Table 7-8**) and scientific monitoring • Ongoing consultation	**Section 7**

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
Regulation 10A(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* Environment Protection and Biodiversity Conservation Act 1999 *(EPBC Act)*	Regulation 13(1)–13(3): *13(1) Description of the activity* *13(2) Description of the environment* *13(3) Without limiting [Regulation 13(2)(b)], relevant values and sensitivities may include any of the following:* *(a) the world heritage values of a declared World Heritage property within the meaning of the EPBC Act;* *(b) the national heritage values of a National Heritage place within the meaning of that Act;* *(c) the ecological character of a declared Ramsar wetland within the meaning of that Act;* *(d) the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act;* *(e) the presence of a listed migratory species within the meaning of that Act;* *(f) any values and sensitivities that exist in, or in relation to, part or all of:* *(i) a Commonwealth marine area within the meaning of that Act; or* *(ii) Commonwealth land within the meaning of that Act.*	No activity, or part of the activity, undertaken in any part of a declared World Heritage property.	**Section 3** **Section 4** **Section 6**
Regulation 10A(g): *(i) the titleholder has carried out the consultations required by Division 2.2A* *(ii) the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate*	Regulation 11A: *Consultation with relevant authorities, persons and organisations, etc.* Regulation 16(b): *A report on all consultations between the titleholder and any relevant person*	Consultation undertaken in the preparation of this EP.	**Section 5**

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
Regulation 10A(h): *Complies with the Act and the regulations*	Regulation 13(4)a: *Describe the requirements, including legislative requirements, that apply to activity and are relevant to the environmental management of the activity* Regulation 15: *Details of the Titleholder and liaison person* Regulation 16(a): *A statement of the titleholder's corporate environmental policy* Regulation 16(c): *Details of all reportable incidents in relation to the proposed activity*	All contents of the EP must comply with the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* and the Environment Regulations	**Section 1.6** **Section 1.7** **Section 1.8** **Section 6.8**

1.7 Description of the Titleholder

Woodside is the Titleholder for this activity on behalf of a Joint Venture comprising both Woodside Energy Scarborough Pty Ltd and Woodside Energy (Australia) Pty Ltd.

Woodside is the largest Australian natural gas producer. The company operates Australia's biggest resource development, the North West Shelf Project (NWS Project) in Western Australia.

Woodside recognises that strong environmental performance is essential to success and continued growth. Woodside has an established methodology to identify impacts and risks and assess potential consequences of activities. Strong partnerships, sound research and transparency are the key elements of Woodside's approach to the environment.

1.8 Details of Titleholder, Liaison Person and Public Affairs Contact

In accordance with Regulation 15 of the Environment Regulations, details of the titleholders, liaison person and arrangements for the notification of changes are described below.

1.8.1 Titleholders

Woodside Energy Scarborough Pty Ltd:
11 Mount Street, Perth, Western Australia
Telephone: 08 9348 4000
ABN: 650 177 227

1.8.2 Nominated Liaison Person

Ryan Felton
Senior Corporate Affairs Advisor
11 Mount Street, Perth, Western Australia
Phone: 08 9348 4000
Email: feedback@woodside.com.au

1.8.3 Arrangements for Notifying of Change

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

1.9 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 of four elements: Compass and Policies, Expectations, Processes and Procedures, and Guidelines, outlined below (and illustrated in **Figure 1-1**):

- **Compass and Policies:** Set the enterprise-wide direction for Woodside by governing our behaviours, actions and business decisions and ensuring we meet our legal and other external obligations.
- **Expectations:** Set essential activities or deliverables required to achieve the objectives of the Key Business Activities and provide the basis for development of processes and procedures.
- **Processes and Procedures:** Processes identify the set of interrelated or interacting activities which transforms inputs into outputs, to systematically achieve a purpose or specific objective. Procedures specify what steps, by whom and when are 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.

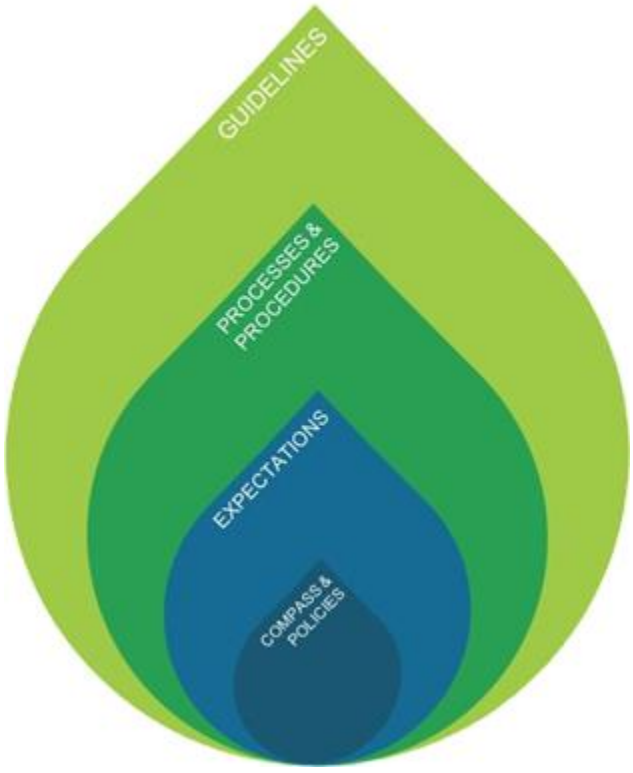


Figure 1-1: The four major elements of the WMS framework

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 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 (E and P) lifecycle. The management activities influence all areas of the business, while support activities may influence one or more value stream activities.

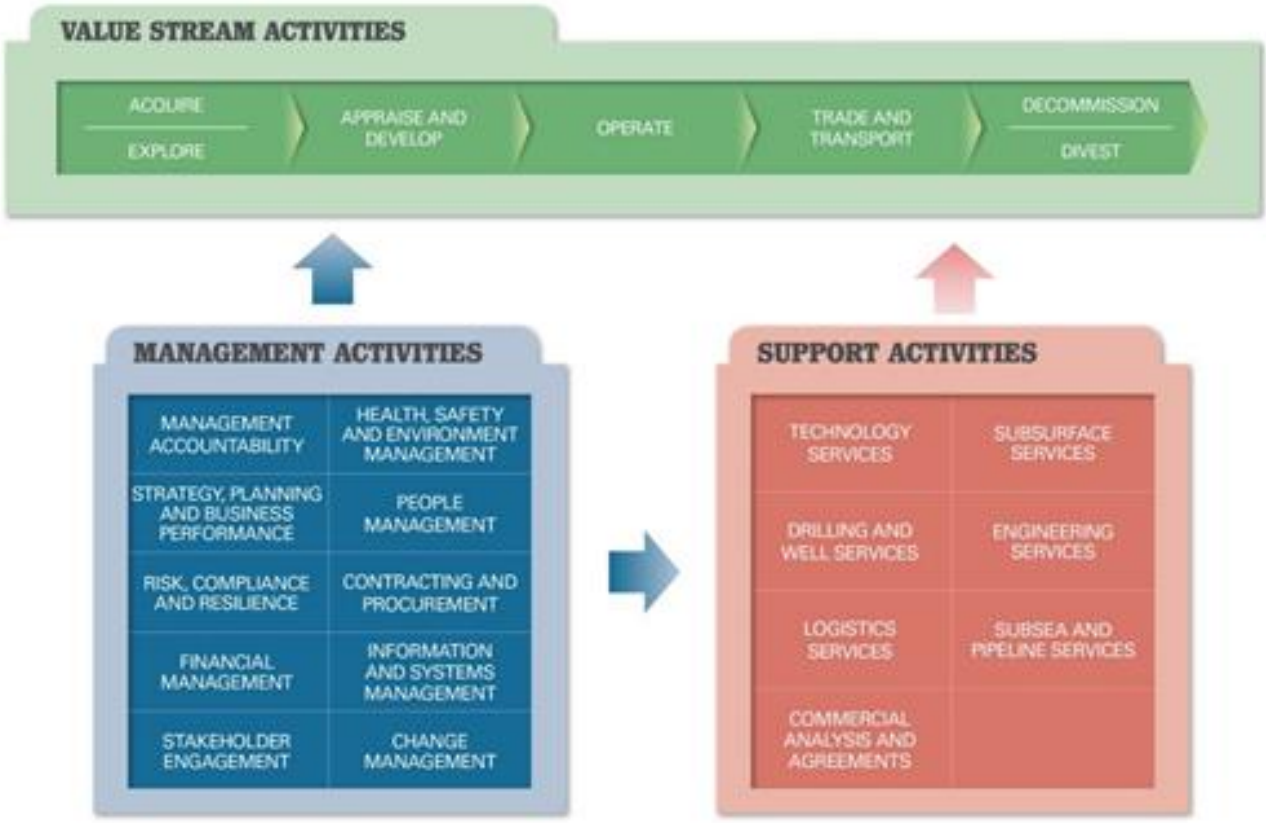


Figure 1-2 The WMS business process hierarchy

1.9.1 Environment and Biodiversity Policy

In accordance with Regulation 16(a) of the Environment Regulations, Woodside's Environment and Biodiversity Policy is provided in **Appendix A** of this EP.

1.10 Description of Relevant Requirements

In accordance with Regulation 13(4) of the Environment Regulations, a description of requirements, including legislative requirements, that apply to the activity and relevant to the management of risks and impacts of the Petroleum Activities Program are detailed in **Appendix B.**

1.10.1 Offshore Petroleum and Greenhouse Gas Storage Act 2006

The Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) provides the regulatory framework for all offshore petroleum exploration and production and greenhouse gas activities in Commonwealth waters (the ocean area beyond three nautical miles to the outer extent of the Australian Exclusive Economic Zone at 200 nautical miles).

The Act regulates all offshore petroleum activities, including decommissioning as set out in, Sections 270 and 572 of the OPGGS Act. While there are no immediate plans for decommissioning (the scope of this EP is for infrastructure installation for future operations) all equipment has been designed to allow for removal. Subsection 572(2) provides that a titleholder must maintain in good condition and

repair all structures that are, and all equipment and other property that is in the title area and used in connection with the operations. Inspection, monitoring, maintenance and repair of the infrastructure installed for future production, under this Environment Plan, will be managed as described in **Section 3.12**.

The regulatory framework establishes the National Offshore Petroleum Safety and Environment Management Authority as the regulator. Under the OPGGS Act, the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations* 2009 (the Environment Regulations), apply to petroleum activities in Commonwealth waters and are administered by NOPSEMA. The object of the Environment Regulations is to ensure that any petroleum activities are carried out in a manner:

- consistent with the principles of ecologically sustainable development (as set out in the EPBC Act)
- by which the environmental impacts and risks of the activity will be reduced to ALARP
- by which the environmental impacts and risks of the activity will be of an acceptable level.

1.10.2 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

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

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

1.10.2.1 Offshore Project Proposal

Woodside submitted the Scarborough OPP to NOPSEMA for assessment in February 2019, which was accepted in March 2020. The OPP provided the detail and evaluation of potential impacts and risks from the key components of the Scarborough Development. These key components include:

- Wells – drilling of the Scarborough and North Scarborough gas fields, with potential for future fields (including Thebe and Jupiter gas fields) to be tied back to the facility.
- Trunkline installation – installation of a gas trunkline to extend for a total of 430 km using trenching and backfill (for nearshore only).
- Surface infrastructure – Floating Production Unit (FPU) in approximately 900 m of water over the Scarborough reservoir.
- Subsea infrastructure - infield infrastructure, including wellheads, manifolds, flowlines and umbilicals, trunkline and communications lines.
- Commissioning – Commissioning of the overall production system will be conducted from the FPU once on location.
- Operations – hydrocarbon extraction and processing will take place at the FPU, to meet the trunkline specifications. Gas will be exported via the trunkline.

- Decommissioning - the facilities will be decommissioned in accordance with good oilfield practice and relevant legislation and practice at the time.

In accordance with Regulation 9 and 6 a titleholder must have submitted and have an accepted EP in place before commencing an activity. Therefore, a number of EPs will be developed and submitted to NOPSEMA over the next five years, to cover components of the Scarborough Development, such as those listed above, including commissioning and operations of the FPU.

Each EP will have a defined Petroleum Activities Program and will detail and evaluate the risks and impacts, demonstrating they have been reduced to ALARP and are acceptable for that particular Program. The Scarborough OPP sets out the environmental performance outcomes (EPOs) for the project and the level of performance to be achieved, to ensure that environmental impacts and risks will be of an acceptable level and the project is consistent with the principles of ecologically sustainable development. These EPOs will be adopted into each EP, where relevant to the particular scope of the EP.

In accordance with Regulation 31 of the Environment Regulations, references to the Scarborough OPP have been made throughout this EP. The accepted OPP is available on the NOPSEMA website: Scarborough Offshore Project Proposal » NOPSEMA Scarborough Offshore Project Proposal » NOPSEMA

1.10.2.2 Recovery Plans and Threat Abatement Plans

Under s139(1)(b) of the EPBC Act, the Environment Minister must not act inconsistently with a recovery plan for a listed threatened species or ecological community or a threat abatement plan for a species or community protected under the Act. Similarly, under s268 of the EPBC Act:

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

In respect to offshore petroleum activities in Commonwealth waters, these requirements are implemented by NOPSEMA via the commitments included in the Program[1]. Commitments relating to listed threatened species and ecological communities under the Act are included in the Program Report (CoA, 2014a).

1.10.2.3 Australian Marine Parks

Under the EPBC Act, Australian Marine Parks (AMPs), formally known as Commonwealth Marine Reserves, are recognised for conserving marine habitats and the species that live and rely on these habitats. The Director of Marine Parks (DNP) is responsible for managing AMP’s (supported by Parks Australia), and is required to publish management plans for them. Other parts of the Australian 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 identified in **Section 4.8** and described in **Appendix I.** The North-west Marine Parks Network Management Plan (DNP, 2018a) describe the requirements for managing the marine parks that are relevant to this EP.

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) (the EPBC Regulations 2000):

[1] Program as described in the Program Report – Strategic Assessment of the environmental management authorization process for petroleum and greenhouse gas storage activities administered al Offshore Petroleum Safety and Environmental Management Authority under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* February 2014

- Special Purpose Zone (IUCN category VI)—managed to allow specific activities though special purpose management arrangements while conserving ecosystems, habitats and native species. The zone allows or prohibits specific activities.
- Sanctuary Zone (IUCN category Ia)—managed to conserve ecosystems, habitats and native species in as natural and undisturbed a state as possible. The zone allows only authorized scientific research and monitoring.
- National Park Zone (IUCN category II)—managed to protect and conserve ecosystems, habitats and native species in as natural a state as possible. The zone only allows nonextractive activities unless authorised for research and monitoring.
- Recreational Use Zone (IUCN category IV)—managed to allow recreational use, while conserving ecosystems, habitats and native species in as natural a state as possible. The zone allows for recreational fishing, but not commercial fishing.
- Habitat Protection Zone (IUCN category IV)—managed to allow activities that do not harm or cause destruction to seafloor habitats, while conserving ecosystems, habitats and native species in as natural a state as possible.
- Multiple Use Zone (IUCN category VI)—managed to allow ecologically sustainable use while conserving ecosystems, habitats and native species. The zone allows for a range of sustainable uses, including commercial fishing and mining where they are consistent with park values.

1.10.2.4 World Heritage Properties

Australian World Heritage management principles are prescribed in Schedule 5 of the EPBC Regulations 2000. There are no world heritage properties that overlap the EMBA. No management principles are considered relevant to the scope of this EP given there is no potential impacts to any of these areas.

2 ENVIRONMENT PLAN PROCESS

2.1 Overview

This section outlines the process Woodside follows to prepare the EP once an activity has been defined as a petroleum activity. The process (**Section 2.2**) describes the environmental risk assessment methodology that is used to identify, analyse and evaluate risks to meet ALARP and acceptability requirements and to develop EPOs and EPSs. This section also describes Woodside's risk management methodologies applicable to implementation strategies applied during the activity.

Regulation 13(5) of the Environment Regulations requires the detailing of environmental impacts and risks, and evaluation appropriate to the nature and scale of each impact and risk associated with the Petroleum Activities Program and potential emergency conditions. The objective of the risk assessment process, described in this section, is to identify risks and associated impacts of an activity, so that they can be assessed, and appropriate control measures applied to eliminate, control or mitigate the impact/risk to ALARP and determine if the impact or risk level is acceptable.

Environmental impacts and risks assessed include those directly and indirectly associated with the Petroleum Activities Program and includes potential emergency and accidental events. This may include environment impacts and risks that are a result of the proposed activity but are not within Woodside's control.

- Planned activities (routine and non-routine) have the potential for inherent environmental impacts.
- An environmental risk is an unplanned event with the potential for impact (termed risk 'consequence').

Herein, the potential result of planned activities are termed 'impacts', where-as 'risks' are associated with unplanned events with the potential for impact (should the risk be realised); with such potential impacts termed 'consequence'.

2.2 Environmental Risk Management Methodology

An assessment of the impacts and risks associated with the Petroleum Activities Program has been undertaken in accordance with Woodside's Environment Impact Assessment Guideline and Risk Management Procedure. This guideline and procedure set out the broad principles and high-level steps for assessing environmental impacts across the lifecycle of Woodside's activities and managing these during project execution.

The key steps of the Woodside impact and risk management process are comprised of the:

- environmental impact and risk assessment
- communication and consultation that informs the assessment and ongoing environmental performance of the activity
- steps required during implementation of the activity including to monitor, review and report.

2.2.1 Establish the Context

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

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

2.2.2 Review of the Significance/Sensitivity of Receptors and Levels of Protection

Sensitivity of receptors relevant to the Scarborough Project, and this Petroleum Activities Program, was determined during development of the Scarborough OPP. As set out within the OPP, the sensitivity of all project receptors, was determined to be either low, medium or high based on qualitative expert judgement.

During development of this EP, OPP receptor sensitivity determinations were reviewed in the context of any changing legislation or changed knowledge regarding the sensitivity of each receptor. No relevant factors that would change receptor sensitivity (from that determined in the OPP) were identified. Receptor sensitivity determinations from the OPP are used in the risk impact assessment summaries for each environmental risk assessment (refer to **Section 6**).

2.2.3 Environmental Legislation and Other Requirements

In preparing this EP, Woodside has ensured the proposed controls and impact and risk levels are consistent with national and international standards, law and policies (including applicable plans for management and conservation advices, and significant impact guidelines for MNES).

This has included developing the project in accordance with all applicable legislation as identified in **Section 1.10**, and ensuring the requirements of the species recovery plans and conservation advices have been considered to identify any requirements that may be applicable to the risk assessment.

2.2.4 Impact and Risk Identification

Terminology used for this impact and risk assessment has been taken from the impact and risk management process, which is aligned with ISO 13001:2018 and the requirements of Part 2 (regulations 6 to 25A) of the OPPGS Regulations.

Impacts and risks of the Scarborough Project were identified in the scoping phase of the Scarborough Project (and presented within the OPP). During this phase, the relationships between the environmental aspects identified for the proposed activities and the associated potential impacts and risks for each receptor are established. This EP considers relevant impacts and risks associated with the Scarborough Project's gravimetry, mooring pre-lay and SURF (Subsea Umbilicals Risers and Flowlines) installation campaigns.

Using the OPP as a guide, all impacts and risks associated with the Petroleum Activities Program for this EP were identified during the EP scoping phase by undertaking an Environmental Risk and Impact Identification (ENVID) workshop. Impacts, risks and potential consequences were identified based on planned and potential interaction with the activity (based on the description in **Section 3**), the existing environment (**Section 4**) and the outcomes of Woodside's stakeholder engagement process (**Section 5**). The ENVID workshop was undertaken by a multidisciplinary team comprising personnel with sufficient breadth of knowledge, training and experience to reasonably assure that the hazards that may arise in connection with the Petroleum Activity Program in this EP were identified.

Impacts and risks were identified during the ENVID 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.

2.3 Impact and Risk Analysis and Evaluation

After identifying impacts and risks, analysis and evaluation is undertaken to determine the extent of the impacts and risks, whether they are acceptable or not, and to identify any impact and risk treatment (or controls) to be implemented.

Impact and risk evaluation are undertaken by assessing the magnitude (i.e. no lasting effect, slight, minor, moderate, major or catastrophic) of the credible environmental impacts from each aspect based on extent, duration, frequency and scale, and then either:

- assigning an impact significance level to each credible environmental impact based on the receptor sensitivity and the magnitude of the impact, OR
- assigning an environmental risk level to each environmental risk based on the receptor sensitivity, magnitude of the consequence, and the likelihood of occurrence.

2.3.1 Impact Evaluation

Impact assessment determines the impact significance of the potential impacts, based on the magnitude and the receptor sensitivity (**Figure 2-1**).

	Receptor Sensitivity			
Magnitude	Low	Medium	High	**Significance Level**
Catastrophic	B	A	A	Catastrophic (A)
Major	C	B	A	Major (B)
Moderate	D	C	B	Moderate (C)
Minor	E	D	C	Minor (D)
Slight	F	E	D	Slight (E)
No lasting effect	F	F	E	Negligible (F)

Figure 2-1: Impact significance level

2.3.2 Risk Evaluation

In support of ongoing risk management (a key component of Woodside's Process Safety Management Framework – refer to Implementation Strategy (**Section 7**)), Woodside uses the concept of 'current risk' and applies a current risk rating to indicate the current or 'live' level of risk, considering the controls that are currently in place and regularly effective. 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 the communication and visibility of the risk events, and ensures risk is continually managed to ALARP by identifying risk reduction measures and assessing acceptability.

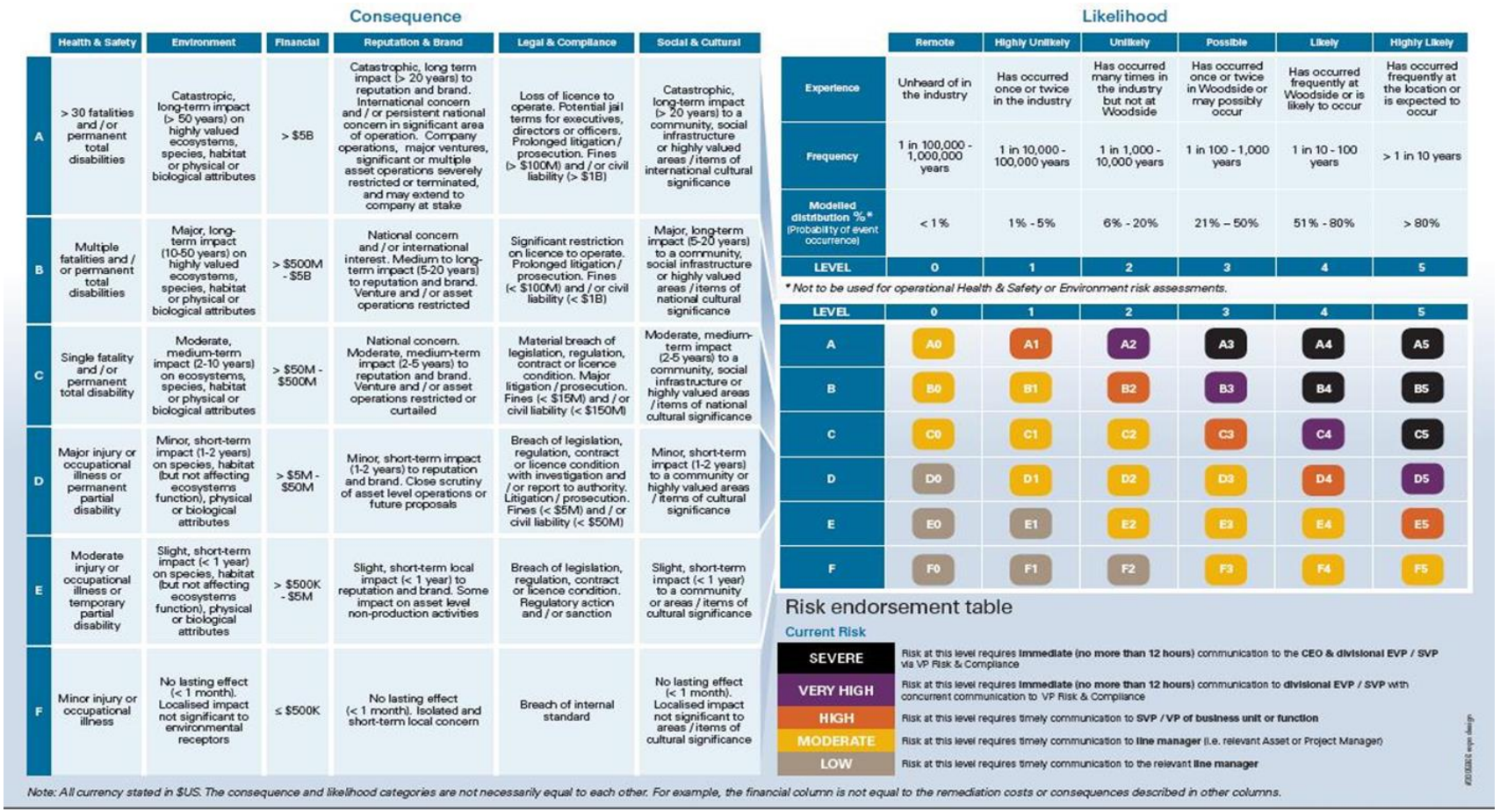


Figure 2-2: Environmental risk levels

2.3.3 Decision Support Framework

To support the risk assessment process 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 has been applied during the ENVID or equivalent preceding processes during historical design decisions to determine the level of supporting evidence that may be required to draw sound conclusions regarding risk level and whether the risk is ALARP and acceptable. This is to confirm:

- activities do not pose an unacceptable environmental risk
- appropriate focus is placed on activities where the risk is anticipated to be acceptable and demonstrated to be ALARP
- appropriate effort is applied to the management of risks 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 (referred to as Decision Type A, B or C). The decision type is selected based on an informed discussion around the uncertainty of the risk, then documented in ENVID output.

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

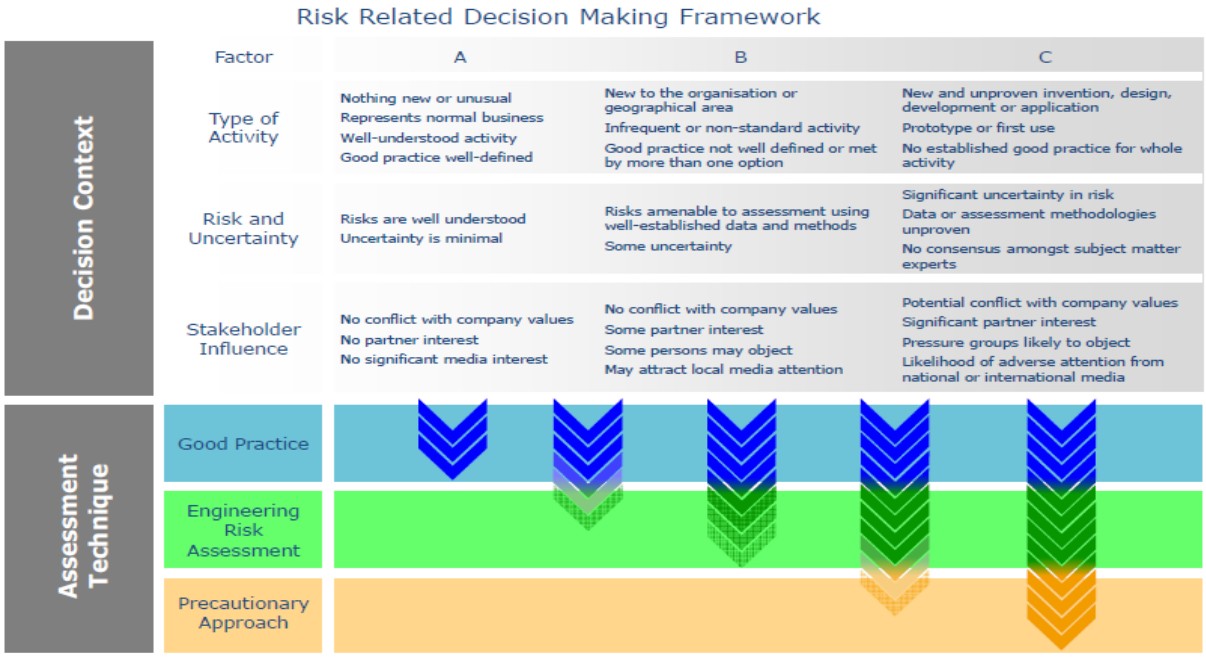


Figure 2-3: Risk related decision-making framework (Oil and Gas UK, 2014)

Decision Type A

Risks classified as a Decision Type A are well understood and established practice, they generally consider recognised good industry practice which is often embodied in legislation, codes and standards and use professional judgement.

Decision Type B

Risks classified as Decision Type B 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 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.

Decision Type C

Risks classified as a Decision Type C typically have significant risks related to environmental performance. Such risks typically involve greater complexity and uncertainty; therefore, requiring 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, in addition to Decision Type A and B tools, company and societal values need to be considered by undertaking broader internal and external stakeholder consultation as part of the risk assessment process.

2.3.4 Demonstration of ALARP

Descriptions have been provided below (**Table 2-1**) to articulate how Woodside demonstrates different risks, impacts and Decision Types identified within the EP are ALARP.

Table 2-1: Summary of Woodside's criteria for ALARP demonstration

Risk	Impact	Decision Type
Low and Moderate	***Negligible, Slight, or Minor (D, E or F)***	***A***
Woodside demonstrates these Risks, Impacts and Decision Types are reduced to ALARP if: ● controls identified meet legislative requirements, industry codes and standards, applicable company requirements and industry guidelines ● further effort towards impact/risk reduction (beyond employing opportunistic measures) is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.		
High, Very High or Severe	***Moderate and above (A, B or C)***	***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 company requirements and industry codes and standards are met ● societal concerns are accounted for ● the alternative control measures are grossly disproportionate to the benefit gained.		

2.3.5 Demonstration of Acceptability

Acceptability of the Scarborough Project, including the Petroleum Activities Program described in this EP, was demonstrated in the Scarborough OPP (SA0006AF0000002, Rev 5) as required by Environment Regulation 5D (6). The EPOs set in the OPP demonstrate that the environment impacts and risks of the project will be managed to an acceptable level.

The impacts and risks of Scarborough were determined to be acceptable in the OPP through consideration of the following evaluation criteria (Scarborough OPP (SA0006AF0000002, Rev 5); Section 6.4.4)

- Principles of Ecologically Sustainable Development (ESD) as defined under the EPBC Act
  - decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
  - if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
  - the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
  - the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;
  - improved valuation, pricing and incentive mechanisms should be promoted.
- internal context – the proposed impacts and risk levels are consistent with Woodside policies, procedures and standards
- external context – stakeholder expectations and feedback have been considered and activities do not have a significant impact on MNES including those with an Indigenous connection with, or traditional use in nearshore areas as defined in **Section 4.9.1**.
- other requirements – the proposed controls and impact and risk levels are consistent with national and international standards, laws, policies and Woodside Standards (including applicable plans for management and conservation advices, and significant impact guidelines for MNES)

In this EP Woodside has demonstrated that the level of acceptability determined in the OPP has been met through the following criteria:

- Adoption of relevant OPP EPOs and controls
- Adoption of EP specific controls where required
- Impact Significance Level / Risk Consequence levels for receptors are equal to or less than the significant impact level defined in the Scarborough OPP (SA0006AF0000002, Rev 5; Section 6.5; Table 6-3) and are therefore consistent with the EPOs and managed to an acceptable level of impact or risk, and
- Consideration of internal/external context and other requirements specific to this EP Petroleum Activities Program (including issues raised during EP Stakeholder Consultation).

A summary of the process as adopted is shown in **Table 2-2**.

Table 2-2: Summary of Woodside's criteria for Acceptability for Scarborough EPs

Risk	Impact	Decision Type
Low and Moderate	***Negligible, Slight, or Minor (D, E or F)***	***A***
Woodside demonstrates these Risks, Impacts and Decision Types are 'Broadly Acceptable' if they meet the EP criteria listed above in **Section 2.3.4**. Further effort towards risk reduction (beyond employing opportunistic measures) is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.		
High, Very High or Severe	***Moderate and above (A, B or C)***	***B and C***
Woodside demonstrates these higher order Risks, Impacts and Decision Types are 'Acceptable if ALARP' if they meet the EP criteria listed above in **Section 2.3.4**. In addition, these higher order risks, impacts and decision types are 'Acceptable if ALARP' if it can be demonstrated that the predicted levels of impact and/or residual risk, are managed to ALARP (as described in **Section 6**). For potential C or above consequence/impact levels where significant uncertainty exists in analysis of the risk or impact (such as, for predicted or potential high risk of significant environmental impacts, significant project risk/exposure, novel activities, lack of consensus on standards, and significant stakeholder concerns. (E.g. Decision Type C), defined acceptable levels and assessment of acceptability may be required to be conducted separately for key receptors.		

2.4 EPBC Act Assessment

To support the demonstration of acceptability, a separate assessment is undertaken across the following three legislative requirements incorporated into the EPBC Act.

2.4.1 Principles of ESD

As part of the demonstration of acceptability an assessment is undertaken to demonstrate that the EP is not inconsistent with relevant principles of ESD (refer **Section 2.3.5**).

2.4.2 MNES: Significant Impact Guidelines 1.1

A separate assessment is undertaken to determine if the potential impacts/risks of the activity trigger any relevant criteria listed in the MNES: Significant Impact Guidelines 1.1.

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of a population
- reduce the area of occupancy of the species
- fragment an existing population into two or more populations
- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of a population
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
- introduce disease that may cause the species to decline, or interfere with the recovery of the species.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species
- reduce the area of occupancy of an important population
- fragment an existing important population into two or more populations
- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of an important population
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
- introduce disease that may cause the species to decline, or
- interfere substantially with the recovery of the species.

2.4.3 Recovery Plan and Threat Abatement Plan Assessment

To support the demonstration of acceptability, a separate assessment is undertaken to demonstrate that the EP is not inconsistent with any relevant recovery plans or threat abatement plans (refer **Section 1.10.2.2**). The steps in this process are:

- identify relevant listed threatened species and ecological communities (**Section 4.60**);
- identify relevant recovery plans and threat abatement plans (**Section 6.100**);
- 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**); and
- 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**).

2.5 Environmental Performance Objectives/Outcomes, Standards and Measurement Criteria

The OPGGS Environment Regulations define EPOs to mean: "a measurable level of performance required for the management of environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level". As such, the process of defining an appropriate EPO, has relied on the required levels of performance set either in legislation (such as the OPGGS Act), regulator guidance notes such as the Matters of National Environmental Significance– Significant Impact Guidelines (DoE, 2013) or may be the result of specific agreements or expectations with other relevant stakeholders (e.g. fishers or other marine users).

EPOs for the Scarborough Project have been set within the Scarborough OPP (SA0006AF0000002, Rev 5) and assessed as meeting the requirements of the Regulations to be appropriate, consistent with the principles of ecologically sustainable development and to demonstrate that the environmental impacts and risks of the project will be managed to an acceptable level.

Environment Plans for petroleum activities submitted subsequent to the OPP process are required to contain EPOs that are appropriate by being consistent with those set out in the

OPP. The EPOs presented in a subsequent EP are not required to be exactly the same however should achieve the same environmental outcome (or better) as that described in the OPP. Activity specific EPs will also be required to contain measurement criteria and performance monitoring, auditing and reporting processes relating to the EPOs.

Table 6-2 shows a comparison between EPOs in the Scarborough OPP (SA0006AF0000002, Rev 5) and this EP.

3 DESCRIPTION OF THE ACTIVITY

3.1 Overview

This section has been prepared in accordance with Regulation 13(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 activities, general details of the installation, survey and associated activities, and additional information relevant to considering environmental risks and impacts.

3.2 Project Overview

Woodside proposes to install subsea infrastructure, carry out survey activities and infrastructure testing within Permit Areas WA-61-L and WA-62-L. The Petroleum Activities Program includes installation of subsea infrastructure, gravimetry preparation and baseline survey and floating production unit (FPU) mooring pre-lay. An overview of the Petroleum Activities Program is provided in **Table 3-1**. **Figure 3-1**[2] illustrates the indicative field layout of the proposed subsea infrastructure detailed in **Table 3-1**

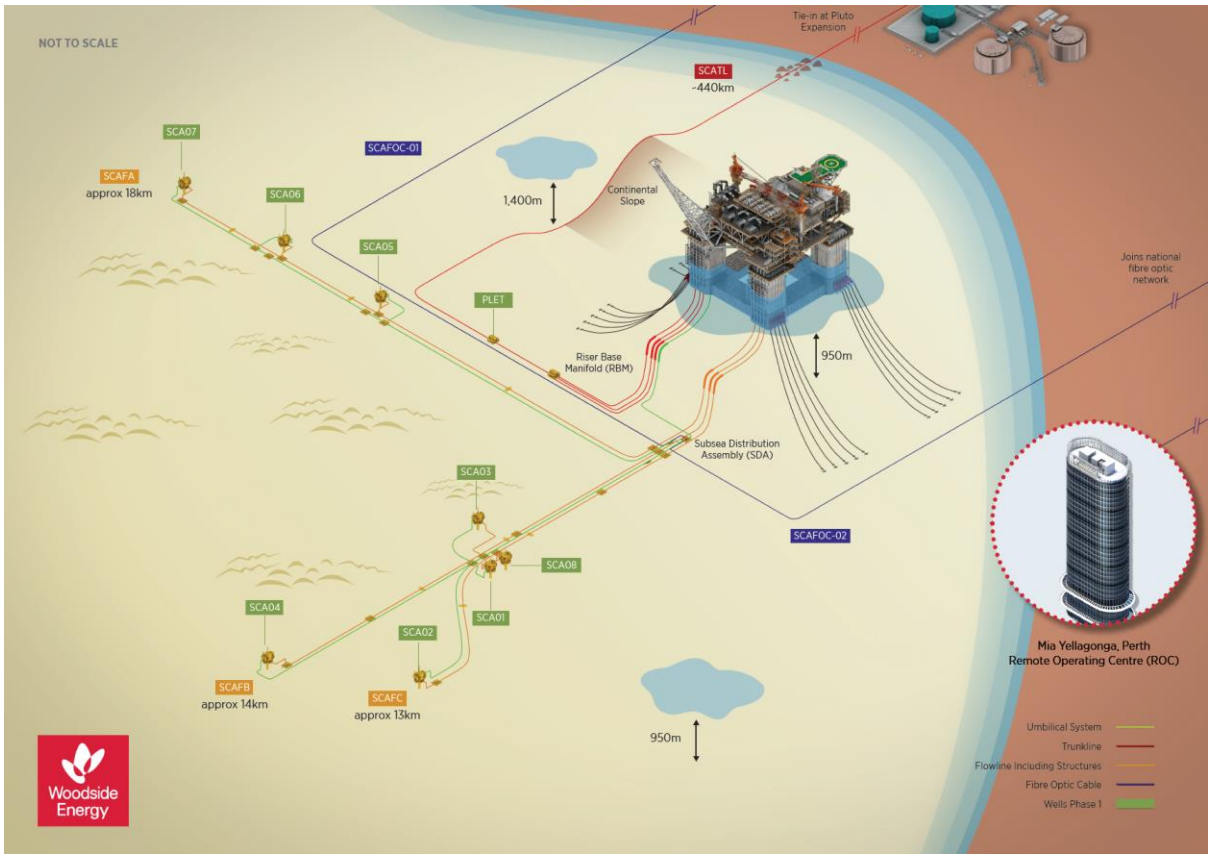


Figure 3-1: Indicative Scarborough field infrastructure layout

[2] Note this figure also includes additional infrastructure not within the scope of this EP, such as the FPU, wells, trunkline, fibre optic cable, and onshore infrastructure).

Table 3-1: Petroleum Activities Program Overview

Item	Description
Permit Area	WA-61-L, WA-62-L
Location	North West Shelf
Water depth	Approximately 900–1000 m
Infrastructure installation	
Key vessel types	● Light construction vessel (LCV) ● Heavy construction vessel (HCV) ● Heavy lift vessel (HLV) ● Pipelay vessel (PV) ● Survey vessel ● Support vessel
Key activities	Installation of the following infrastructure: ● 3 x flowlines ● 7 x flowline sleepers ● 1 x riser base manifold (RBM) and foundation ● 13 x mud mats ● 12 x mud mats (contingency) ● 7 x in-line structures (in-line T) ● 6 x flowline end terminations (FLETS) ● 7 x umbilical termination assemblies ● 7 x umbilical termination heads ● 2 x subsea distribution units ● 1 x subsea distribution assembly ● 7 x umbilicals ● 9 x flexible jumpers (includes 1 spare) ● Multiple flying leads ● 1 x trunkline spool and support ● 20 x suction piles ● Up to 265 x concrete pads Temporary installation of the following infrastructure: ● 1 x suction pile and leader wire for each flowline lay initiation ● Installation aids (i.e. transponder arrays, frames, tide gauges) ● Wet-storing of dynamic umbilicals (x 1) and risers (x 6) ● Wet-storing of mooring legs (x 20) Other activities: ● ROV operations ● Pre-, progress and post-installation surveys ● Baseline gravimetry survey ● Flood, clean, gauge, and pressure and leak testing ● Inspection, monitoring, maintenance and repair (IMMR) ● Contingent activities including debris removal as required, transportation of equipment to field with tug and barge spread or HLV

3.3 Concordance with Scarborough OPP

The Scarborough OPP describes the scope of the project and its component activities, at a level comprehensive enough to facilitate thorough evaluation of environmental impacts and risks and appropriate setting of EPOs. However, in accordance with NOPSEMA guidance, it is acknowledged that an OPP is prepared at an early stage in project development, before detailed planning of component activities has occurred. More detailed descriptions of the component activities are therefore expected in subsequent EPs.

Refinement or modifications to methods or timing for individual project activities may occur after an OPP acceptance and before the submission of EPs. These refinements or modifications to the accepted project cannot be new activities and cannot significantly change the overall environmental impacts and risks of the project as described in the accepted OPP. **Table 3-2** shows which scopes from the Scarborough OPP may have progressed in level of definition since the Scarborough OPP was accepted by NOPSEMA.

Section 4 of the Scarborough OPP (SA0006AF0000002, Rev 5) provides a detailed description of the Scarborough project.

Table 3-2: Concordance of activities described in the Scarborough OPP with those included in this EP

Scarborough OPP Section	Scope or overview of the Activity	Relevance to this EP	Refinement or modification to methods	Refinement or modification to timing	Is this a new activity	Significance of change
4.4.2.1	With respect to reservoir monitoring methodology, the OPP states that "Pressure and saturation changes in the reservoir will be monitored over the life of the Project. Data will be used to inform decisions regarding reservoir management."	Reservoir monitoring methods have since been further defined to include gravimetry, a process involving installation of concrete pads on the seabed which are used to periodically support a passive gravity meter and enable determination a field-wide measurement of gravity (Ref Section 3.9). The extent of seabed disturbance caused by gravimetry concrete pads across WA-61-L & WA-62-L is up to 530 m^2 (concrete pads are each ~2 m^2 in area). Although this area was not specifically included in the OPP seabed disturbance calculations, it is encompassed in the contingency area included in the 234,000 m^2 total disturbance estimate. This area was used as a basis for impact assessment in the OPP. Hence there is no change in impact from the OPP.	Yes	No	No	This change does not significantly alter the overall environmental impacts and risks of the project as described in the accepted Scarborough OPP. Section 6.7.1 of the EP has assessed the impact / consequence of seabed disturbance from subsea infrastructure (including gravimetry concrete pads) to have a maximum impact significance level of 'D' (Minor) based on impact potential for the most sensitive receptor (KEFs). The impact significance levels for receptors are consistent with the levels rated in the Scarborough OPP. As part of consultation for this EP, all relevant stakeholders have been consulted on the activity, including the gravimetry scope.

Scarborough OPP Section	Scope or overview of the Activity	Relevance to this EP	Refinement or modification to methods	Refinement or modification to timing	Is this a new activity	Significance of change
4.4.2.2	The OPP states that "drill centres are connected to manifolds by well jumpers…:	In the current subsea infrastructure design, wells/x-mas trees are connected to the flowline via well jumpers and in-line tees, rather than well jumpers and manifolds.	Yes	No	No	This change does not significantly alter the overall environmental impacts and risks of the project as described in the accepted Scarborough OPP. The result of this change is a reduced seabed disturbance, as in-line tees have a smaller footprint than manifolds. This impact is assessed in Section 6.7.1.
7.2.6.1	The OPP defines the following as a credible spill scenario: "Partial or total failure of a bulk transfer hose or fittings during bunkering, combined with a failure in procedure to shutoff fuel pumps, for a period of up to five minutes, resulting in about 8 m^3 MDO loss to the deck and/or into the marine environment."	This scenario has been updated to a more conservative estimate: "Partial or total failure of a bulk transfer hose or fittings during bunkering, combined with a delay to shutoff fuel pumps, for a period of up to fifteen minutes, resulting in approximately 50 m^3 marine diesel lost to the deck and/or into the marine environment."	Yes	No	No	This change does not significantly alter the overall environmental impacts and risks of the project as described in the accepted Scarborough OPP. The overall significance level for an unplanned hydrocarbon release during bunkering is Minor (D) based on a minor impact to the most sensitive receptors (Section 6.8.3). The impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.

3.4 Location

The Petroleum Activities Program is located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 375 km west-north-west of Dampier. The closest landfall to the Petroleum Activities Program is the North West Cape, about 216 km south-south-east at its nearest point **(Figure 3-2**). The indicative locations and depths of the key subsea infrastructure are presented in **Table 3-3**.

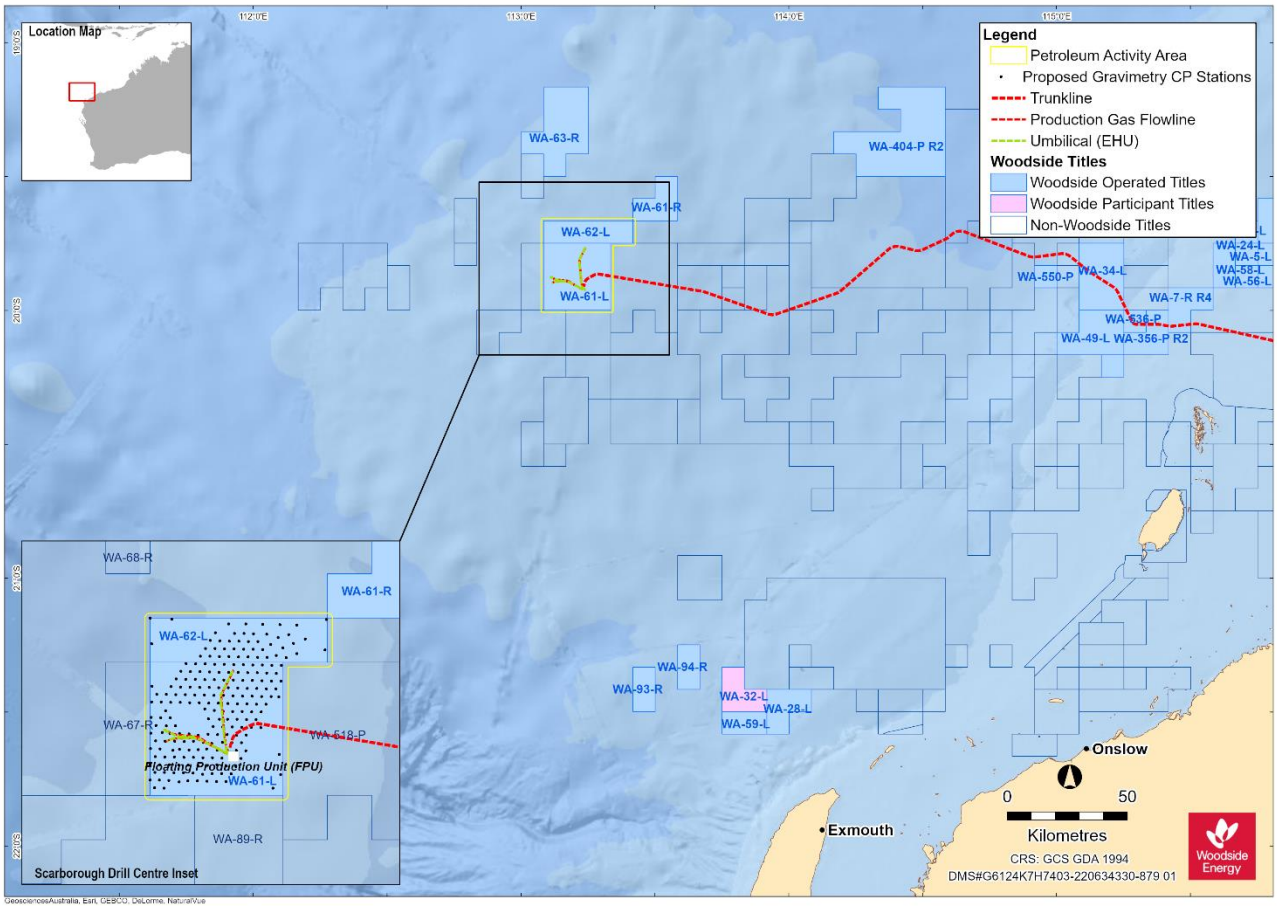


Figure 3-2: Petroleum Activities Program location and Operational Area

Table 3-3: Approximate Coordinates, water depths and permit areas of key subsea infrastructure

Structure for installation	Approx. Easting (m)	Approx. Northing (m)	Approx. Water Depth (m)	Permit Area
Start of Flowline A and associated infrastructure	106033	7810217	-907	WA-61-L
End of Flowline A and associated infrastructure	105222	7793017	-946	WA-61-L
Start of Flowline B and associated infrastructure	92743	7797625	-918	WA-61-L
End of Flowline B and associated infrastructure	105312	7792834	-948	WA-61-L
Start of Flowline C and associated infrastructure	93208	7795255	-913	WA-61-L
End of Flowline C and associated infrastructure	105273	7792765	-948	WA-61-L
Northern end of mooring array	734706	7796796	-943	WA-61-L
Southern end of mooring array	734564	7793314	-961	WA-61-L
Eastern end of mooring array	736470	7795081	-956	WA-61-L
Western end of mooring array	732982	7795189	-949	WA-61-L
North-western outer concrete pad	718562	718562	-969	WA-62-L
North-eastern outer concrete pad	753374	7823459	-928	WA-62-L
South-eastern outer concrete pad	742329	7788466	-955	WA-61-L
South-western outer concrete pad	718976	7788850	-966	WA-61-L

3.5 Operational Area

The spatial boundary of the Petroleum Activities Program has been described and assessed using two ‘areas’, the Operational Area and the Permit Area. The combination of the Operational Area and Permit Area defines the spatial boundary of the Petroleum Activities Program, as described and risk assessed by this EP, including vessel related petroleum activities. This EP provides for Operational Areas within the Petroleum Activities Area (PAA), including:

- For gravimetry activities, the Operational Area encompasses a radius of 1000 m around location of the outermost concrete pads, in which gravimetry preparation and survey activities will take place and will be managed under this EP. This results in an operational area that encompasses and extends beyond Permit Areas WA-61-L and WA-62-L (see **Figure 3-2)**. The 1000 m (radius) Operational Area around the outermost concrete pads allows for the movement and positioning of vessels.
- For the subsea installation activities, the Operational Area encompasses a radius of 1500 m from the centre point or from the centreline of subsea infrastructure, in which subsea installation activities will take place and will be managed under this EP. The 1500 m (radii) Operational Area around subsea infrastructure allows for the movement and positioning of vessels.
- For mooring pre-lay activities, the Operational Area encompasses a radius of 2000 m around the future location of the FPU, in which mooring pre-lay activities will take place and will be managed under this EP. The 2000 m (radius) Operational Area around the future FPU location allows for moorings to be deployed and the movement and positioning of vessels.

The Operational Area(s) and Permit Area are collectively referred to as the PAA in this EP. Vessel-related activities within the Operational Area will comply with this EP. Vessels supporting the Petroleum Activities Program when outside the Operational Area must adhere to applicable maritime regulations and other requirements.

3.6 Timing

The Petroleum Activities Program has an estimated cumulative duration of 18 months (excluding IMMR activities), with activities occurring in multiple campaigns for completion within a three-year window. The earliest commencement date (subject to approval) is estimated to be the second half of 2023.

Table 3-4 provides a breakdown of the estimated duration of planned installation and other activities. The EP has impact and risk assessed these activities throughout the year (all seasons) to provide operational flexibility for schedule changes and vessel availability.

When underway, activities will be 24 hours per day, seven days per week. Simultaneous operations (SIMOPS) may occur between activities within the PAA, with timing of some subsea installation, mooring and survey activities overlapping. Timing, duration and vessel selection for all activities is subject to change due to project schedule requirements, vessel availability, unforeseen circumstances, and weather.

Table 3-4: Summary of Petroleum Activities Program timing

Activity	Vessel type	Earliest estimated start & estimated duration
Gravimetry		
Installation of concrete pads	LCV	Around Nov 2023 – ~2 months
Baseline gravimetry survey	Survey vessel or LCV	Around Nov 2024 – ~2 months

Activity	Vessel type	Earliest estimated start & estimated duration
SURF campaign 1		
Flowline reel-lay Installation of RBM foundation, initiation suction pile, in-line structures, mud mats, sleepers, survey array, Pre-lay & post-lay surveys Infrastructure storage and transport to field (contingency only) Flood, clean, gauge and test	PV, LCV, support vessels (may include tug and barge spread)	Around Oct 2023 – ~3 months
FPU mooring pre-lay		
Pre-lay survey	LCV	This scope will be executed by the LCV conducting the concrete pad installation scope
Mooring pre-lay Infrastructure storage and transport to field (contingency only) Post-lay survey	HCV, support vessels (may include HLV)	Around Feb 2024 – ~3 months
SURF campaign 2		
Installation of in-field umbilicals, and flying leads, control system mud mat, subsea distribution units/assembly, umbilical termination assemblies, RBM, spool, jumpers Wet storing of dynamic umbilical and risers Pre- & post-lay surveys Infrastructure storage and transport to field (contingency only) Leak testing	HCV, LCV, support vessels (may include HCV, tug and barge spread)	Around Nov 2024 – ~3 months
Inspection, monitoring, maintenance and repair		
ROV inspection Sediment relocation Marine growth removal Infrastructure repair	Offshore Construction Vessel (OCV) (or similar)	May occur any time post-infrastructure installation for the life of the EP

3.6.1 Concurrent Operations

Concurrent operations will occur between activities included in this Petroleum Activities Program and Scarborough activities covered by other EPs (i.e. drilling and completions or trunkline installation). The cumulative impact of concurrent operations has been assessed in **Section 6.2.1** of this EP. Interactions between these scopes (i.e. simultaneous operations) will be managed through SIMOPs plans if required.

3.7 Vessel Operations

Several vessel types will be required to complete the activities associated with the Petroleum Activities Program. These are detailed in **Table 3-5**.

Vessels may mobilise from an Australian port or directly from international waters to the PAA, in accordance with biosecurity and marine assurance requirements. Vessels will not usually anchor within the PAA during the activities and instead maintain position using dynamic positioning (DP).

DP uses multiple sources of positioning data (such as satellite navigation and radio transponders) to maintain the position of the vessel at a required location. In some instances, higher levels of accuracy may be required, where satellite information is enhanced via seabed transponders. These transponders emit signals that are detected by receivers on the vessel and used to calculate position. The transponders are typically deployed in an array on the seabed, using clump weights comprising concrete. They are recovered at the end, generally by ROV, and clump weights will also be recovered.

All vessels will display navigational lighting and external lighting, as required for safe operations. Lighting levels will be determined primarily by operational safety and navigational requirements under relevant legislation, specifically the Navigation Act 2012 (Cth) (Navigation Act). The vessels will be lit to maintain operational safety on a 24-hour basis.

Typical vessel parameters a presented in Table 3-5.

Table 3-5: Typical vessel parameters

Parameter	LCV (Seven Pegasus)	HCV (DLV 2000)	PV (Seven Oceans)	HLV (Happy Sky)
Draft (max)	6.75 m	7.9 m	7.5 m	9.5 m
Length	131.7 m	184 m	157.3 m	154.8 m
Gross tonnage	9494 t	45,247 t	18,201 t	17,775 t
Crane capacity (AHC)	400 t	2000 t	400 t	1,100 t
Total fuel volume	1200 m^3	3751 m^3	2800 m^3	1800 m^3
Volume of largest fuel tank	362 m^3	998 m^3	514 m^3	250 m^3

Other vessels used for the survey and installation activities include survey vessels, tug and barge spreads, fuel bunkering and support vessels. These are smaller vessels than those detailed above.

Support vessels will be used to transport equipment and materials between the activity vessels and port. The loading and back-loading of equipment, materials and wastes is one of the most common supporting activities conducted. The support vessels, when in the PAA, are also available to assist in implementation of the Oil Pollution First Strike Plan, should an environmental incident occur (e.g. spills).

3.8 Support Operations

3.8.1 Refuelling

Vessels will be refuelled via support vessels as required. Refuelling may take place within the PAA and has been included in the risk assessment for this EP. Other fuel transfers that may occur on board vessels may include refuelling of cranes or other equipment as required.

3.8.2 Helicopter Operations

During the Petroleum Activities Program, crew changes may be performed using helicopters as required. Helicopter operations within the PAA are limited to helicopter take-off and landing on the helideck. Helicopters may be refuelled on the helideck. Helicopters may also be used in emergency response events.

3.8.3 ROV Operations

Vessels will be equipped with ROV systems that are maintained and operated by specialised personnel aboard the vessel. ROVs may be used during activities including:

- Observation during installation activities.
- Physical installation assistance.
- Pre- and post-lay surveys.
- Removal of debris.

3.8.4 Surveys

Survey activities may be carried out prior to the commencement of infrastructure installation activities, during scope execution and after the activity is complete. Surveys may collect data to gather information on:

- seabed and near seabed geomorphology
- debris/obstacles
- infrastructure position

The survey activities can be undertaken either from a dedicated survey vessel, ROV or from the construction vessels themselves.

The survey methods may include multibeam echo sounders (MBES), side scan sonar (SSS), pipe trackers, and magnetometer, and may utilise underwater acoustic positioning. The survey methods used will be dependent on survey objectives. Sound waves are transmitted from a transducer mounted on either an ROV or hull of the vessel and return signals (echos) from the seabed, near seabed or other acoustic survey equipment.

MBES can be used to undertake hydrographic surveys prior to, during and post-installation activities. SSS, pipe trackers and magnetometers may be used to verify positions of existing seabed features and infrastructure.

A baseline gravimetry survey will also be executed under this Petroleum Activities Program and is described in **Section 3.9**.

3.8.5 Underwater Acoustic Positioning

Accurate positioning of subsea infrastructure on the seabed is required and therefore Ultra Short Baseline (USBL) and/or Long Base Line (LBL) acoustic positioning will be required.

Typically, USBL subsea transponders are mounted on an ROV or structure which transmits an acoustic pulse back to the vessel receiver, which can be resolved to an accurate subsea position of the ROV or structure.

The LBL array provides accurate positioning within the array by measuring ranges to three or more transponders deployed at known locations on the seabed and structures. These transponders, and associated frames, will be recovered at the end of the petroleum activities. Alternatively, LBL transponders may be moored to the seabed by a sacrificial clump weight which are recovered by

means of a hydrostatic release. The standard clump weights used, made of cement or steel, will weigh about 80 kilogram (kg).

Transmissions are not continuous but consist of short 'chirps' with a duration that ranges from between about 3 and 40 milliseconds. Transponders will not emit any sound when on standby.

3.8.6 Marine growth removal

Excess marine growth may need to be removed from subsea infrastructure using an ROV if accumulated between installation phases. Any residual cleaning debris and water will be managed in line with the approach applied to routine vessel discharges. **Table 3-6** lists the different marine growth removal techniques that may be used.

Table 3-6: Marine growth removal methods

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

3.8.7 Critical lifts / equipment transfers

Critical lifts and/or vessel to vessel transfers of equipment may occur within the PAA. Vessel to vessel equipment transfers are required when a vessel transports equipment from port (local or international) and then hips up to an installation vessel to lift equipment between vessels using the on-board cranes.

Critical lifts may occur between vessels or during installation of equipment to the seabed. Critical lifts may refer to a heavy or complicated lift, as defined in the applicable lifting standard, and require specific vessels with appropriately rated cranes, lifting equipment and lifting plan.

3.9 Gravimetry

Among the many variables which define the Scarborough reservoir range, the large regional aquifer and the associated uncertainty of water movement are a material contributor. 4D seismic monitoring alone will be challenged to reduce the uncertainty associated with water movement, and gravimetry technology has been identified as a suitable complement to 4D seismic for monitoring field-wide water movement in the reservoir. The technique delivers a field-wide measurement of gravity, providing direct measurement of water movement / saturation and reservoir compaction / subsidence.

Preparation for Scarborough gravimetry surveys involves installation of approximately 220 concrete pads (up to 265 depending on final design) by an LCV. The pads are conical frustum-shaped, 1.6 m in diameter, and will be placed in a grid like pattern approximately 2 km apart, having a cumulative seabed footprint of approximately 500 m^2. The concrete pads ensure that measurements are acquired at the same position on the seabed in consecutive surveys, such that observed time-lapse differences in gravity and water depth can be unambiguously attributed to the effect of hydrocarbon production. These will remain deployed on the seabed until end of field life.

Following preparations, a baseline gravimetry survey will be conducted. The survey will involve temporary placement of a passive gravity meter, sequentially on each concrete pad by, and temporary deployment of tide gauges on the seabed by a survey vessel or LCV. The tide gauges will be recovered after the survey is complete. The purpose of the survey is to monitor pressure and

saturation changes in the reservoir, to inform decisions regarding reservoir management. See **Figure 3-3** for an activity diagram.

Not to scale

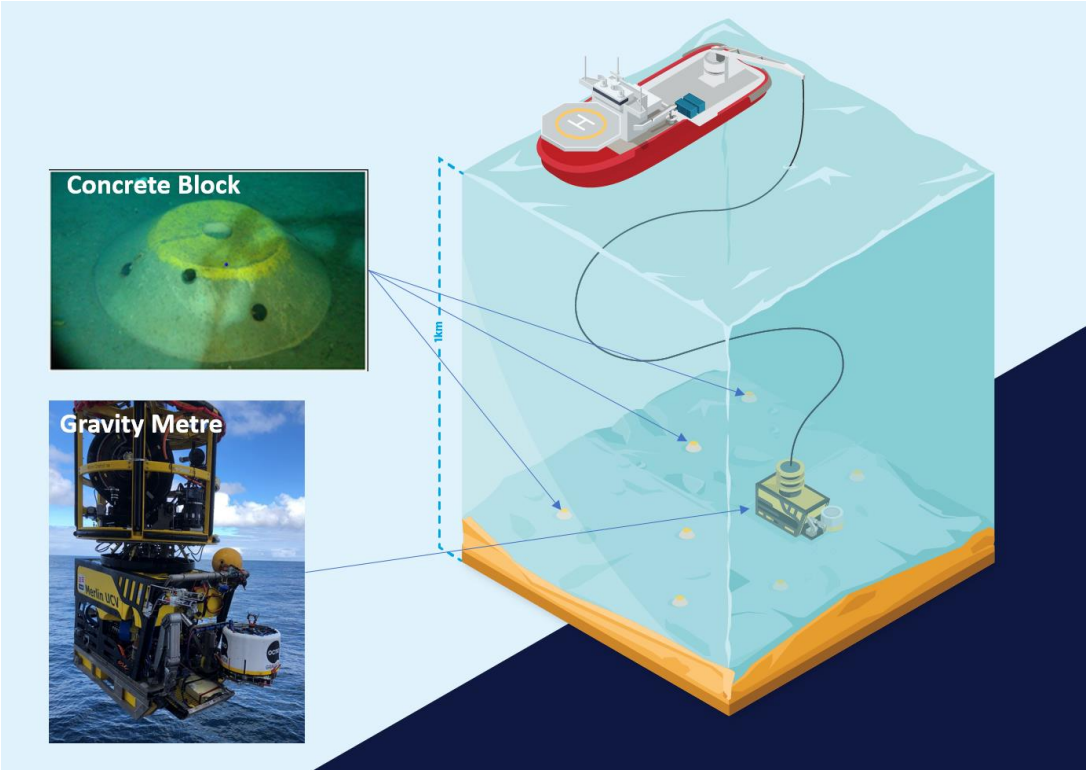


Figure 3-3: Gravimetry activity diagram

3.10 Subsea Infrastructure Installation

3.10.1 Campaign 1

It is intended that activities across subsea infrastructure installation campaign 1 will be conducted by a PV or LCV, as described in **Table 3-5**. Some activities planned for the PV and LCV may be performed by the other vessel depending on operational constraints.

Installation of the survey beacon array are planned to occur prior to the pre- and post-lay surveys. Pre-and post-lay surveys will be conducted from vessel and ROV to assess seabed condition pre-installation and confirm infrastructure location post-installation.

Thirteen mud mats, approximately 16 m x 9 m x 0.3 m in size, are planned to be installed by the LCV, to provide a base for the installation of other infrastructure (in-line structures). Up to twelve additional mud mats, 8 m x 4 m x 3 m in size, may be installed as foundations for the subsea distribution units (SDUs) and umbilical termination assemblies (UTAs). It is intended that seven flowline sleepers of approximately 30 m x 2.5 m x 1 m in size will be deployed by the LCV along the pipeline routes prior to reel lay activities.

The intention is that a single initiation suction pile will be temporarily installed by the reel-lay vessel prior to each of the three flowline installations. This 15 m high, 5 m wide pile would be lowered to the seabed and allowed to self-bury, before the ROV commences suction to penetrate pile to target depth. An initiation wire would then be attached to allow the flowline installation to commence.

Flowline installation is intended to occur across three separate stages. This process is initiated with lifting of the Flowline End Termination (FLET) from a supply vessel, which is then deployed to depth

and attached to the initiation wire. The reel-lay vessel will then lay lengths of the flowline, and intermittently install in-line structures, including the In-Line Tees (ILTs) and FLETs, onto pre-installed mud mats. In total there will be three lengths of flowline, seven ILTs and six FLETs installed.

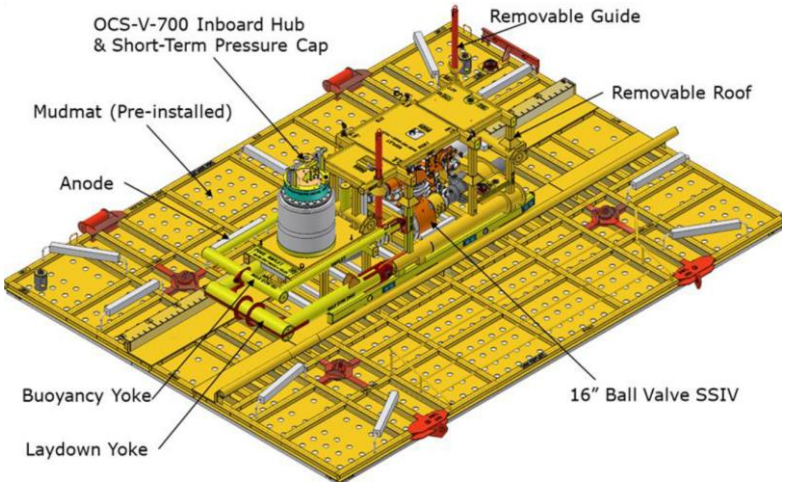


Figure 3-4: FLET diagram

The reel-lay vessel is also intended to install the riser base manifold (RBM) foundation, prior to RBM installation in Campaign 2. The foundation is comprised of four suction piles with a rigid frame attached to the top, with overall dimensions of approximately 28 m x 15 m x 6 m. The intention is that the foundation will be lifted from a transport barge and lowered to the seabed. Various equipment may be employed to assist with orientation and landing on the seabed, such as a clump weight, bridle or ROV. An ROV may also be used to penetrate the piles to target depth.

Post installation, all installation aids (i.e., transponder arrays, frames) are planned to be removed. This will be confirmed via an ROV inspection.

Following installation, it is intended that the temporary heads on the FLETs will be replaced with Pig Launcher Receivers (PLRs). The FLET valves would then be opened and the flowlines flooded, cleaned and gauged (FCG), replacing the air contents with treated seawater from a subsea flooding unit. Flowlines will be leak tested from the riser base FLETs to confirm the tightness of connections, using an ROV based hydrotesting skid. Post-hydrotest, the pressure in the flowlines is reduced by releasing a small volume of the treated water. A summary of the discharges associated with FCG and hydrotesting are in **Table 3-7**. De-watering of the installed infrastructure will occur post-FPU arrival and will therefore be the subject of a future EP.

Table 3-7: Planned discharges during subsea installation activities (Campaign 1)

Activity	System	Contents	Chemical concentration	Approximate discharge volume	Contingency discharge volume*
FCG	Flowline A	Filtered and treated seawater	600 ppm	31.4 m^3	373 m3
	Flowline B	Filtered and treated seawater	600 ppm	31.4 m^3	288 m3
	Flowline C	Filtered and treated seawater	600 ppm	31.4 m^3	272 m3
Hydrotest	Flowline A	Filtered and treated seawater	600 ppm	20 m^3	N/A
	Flowline B	Filtered and treated seawater	600 ppm	20 m^3	N/A

Activity	System	Contents	Chemical concentration	Approximate discharge volume	Contingency discharge volume*
	Flowline C	Filtered and treated seawater	600 ppm	20 m^3	N/A

**20% of flowline volume; discharged only if there is no clear indication of pigs' arrival.*

3.10.2 Campaign 2

It is intended that activities across SURF campaign 2 will be conducted by an LCV or HCV, as described in **Table 3-5**. These will occur as detailed in the following paragraphs, although not necessarily in this particular order.

Pre- and post-lay surveys are planned to be conducted from vessel and ROV to assess seabed condition pre-installation and confirm infrastructure location post-installation.

Installation of the RBM is intended to be conducted by lifting the structure from the deck of the vessel, lowering to seabed and aligning this with the pre-installed foundation, with ROV assistance. The RBM provides a connection point for the wet-parked export risers, while the production risers will be connected to the infield FLETs.

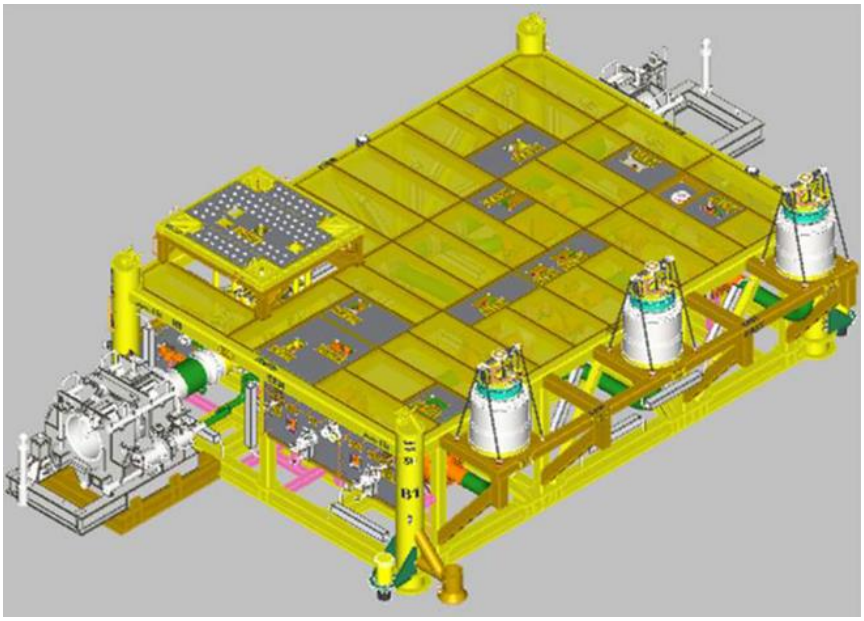


Figure 3-5: RBM diagram

A total of six risers (three export and three production) are planned to be installed. Lengths range between about 2.2 and 2.9 km, and the inner diameter is 14″. The risers will have a lazy wave catenary configuration supported by bend stiffener and buoyancy modules. The HCV will lay the risers via the lay system, starting from the FPU end, using a clump weight for initiation. The riser, with ancillaries connected, will be lowered to the seabed, and as the length of the riser is continually laid out, lazy wave buoys will be installed. The subsea end of the riser will be lowered last to the seabed and connected to the appropriate tie-in structure. It is intended that the risers will be installed pre-filled onshore with treated freshwater.

Eight 8″ flexible jumpers, 120 m each, are intended to be deployed to depth using the HCV cranes and connected to appropriate infrastructure with ROV support. These will be installed pre-filled onshore with treated freshwater and 60wt% Mono Ethylene Glycol (MEG).

A total of nine umbilicals, both dynamic and static, are planned to be installed. These range between about 108 mm and 212 mm in outer diameter. One dynamic umbilical will be installed similarly to the risers, initiated with an anchor (clump weight or similar) at one end, laid out from there and wet stored on the seabed. It is intended that the subsea end of the dynamic umbilical will be landed onto its pre-installed mud mat, while the topside end will be wet-stored with pick-up rigging to facilitate future connection. Like the risers, the dynamic umbilical includes a bend stiffener to maintain a lazy wave catenary configuration. It is intended that the eight static umbilicals to be connected subsea to initiate, laid away and the second end then connected subsea. The installation vessel's vertical lay system will be used to install the umbilicals with Umbilical Termination Assemblies (UTAs) and Umbilical Termination Heads (UTHs). Flying leads will be deployed to seabed by the LCV on deployment frames. An ROV will remove the leads from the frames and connect to associated infrastructure. Two SDUs and one subsea distribution assembly (SDA) are also planned to be installed during this campaign.

A 32″ rigid spool will connect the RBM to the export trunkline termination (the latter detailed in the Scarborough Seabed Intervention and Trunkline Installation (SI&TI) Environment Plan). The horizontal, s-shaped spool is approximately 51 m x 16 m x 3.6 m, and will be pre-filled onshore with treated and dyed freshwater. The intention is that it will be lifted from the deck of the HCV or transport barge, lowered and deployed to the seabed, and connected to the RBM and export trunkline termination with ROV support.

Installation of the pre-filled risers, jumpers and spool will result in small volumes of preservation fluid being discharged to the environment. This will occur during activities such as cap removal and connector tie-in. Discharges associated with subsea installation activities are expected to be negligible (<1 m^3 per connector).

Following installation, various leak tests will be performed on the installed infrastructure. Flexible risers and well jumpers will be leak tested from the relevant FLET or ILT with an ROV based hydrotesting skid, and all subsea tie-ins will be visually inspected during the leak test hold period for leak detection. No MEG will be discharged subsea during leak testing of well jumpers; the volume used to pressurise will be vented to a tank and recovered to surface on completion of the test. The gas export system will also be leak tested using an ROV based hydrotesting skid, by injecting treated freshwater into the gas export system RBM, against closed valves on the PLET and high pressure (HP) caps on flexible risers; all subsea tie-ins will be visually inspected during leak test hold period for leak detection. A summary of the discharges associated with leak testing are in **Table 3-8**. De-watering of the installed infrastructure will occur post-FPU arrival, and will therefore be the subject of a future EP.

Table 3-8: Planned discharges during subsea installation activities (Campaign 2)

Activity	System	Contents	Chemical concentration	Approximate discharge volume	Contingency discharge volume*
Leak test	Production Riser A	Filtered and treated freshwater	600 ppm	5 m^3	N/A
	Production Riser B	Filtered and treated freshwater	600 ppm	5 m^3	N/A
	Production Riser C	Filtered and treated freshwater	600 ppm	5 m^3	N/A
	Gas export system	Filtered and treated freshwater	600 ppm	15 m^3	N/A
	Jumpers	Dyed MEG	60wt%	1 m^3*	N/A

**Includes MEG flush of hoses prior to connection to subsea asset. MEG will be returned to the MEG reservoir (bladder tank) during depressurisation.*

3.10.3 FPU Mooring Pre-Lay

Moorings for the FPU will be installed prior to FPU arrival. Each of the 20 legs will be composed of both wire and chain components and extend approximately 1650 m from the FPU. Legs will be anchored with 23 m high by 8 m diameter suction piles, buried with only the top 1–2 m exposed above seabed. Mooring legs are connected to the suction piles and wet-stored on the seabed with attached recovery assistance, until connection to the FPU, which will be addressed by a future Environment Plan.

Moorings and suction piles will be stored on a HLV nearshore, then transported to the field and installed with an HCV crane and deep water lowering system by placing suction piles on the seabed and engaging the suction system, via a subsea pump, to bury. Attached mooring legs will then be laid-back on the seabed in a planned configuration within the future FPU mooring footprint and wet stored until FPU arrival and hook-up. Contingency of the HLV or another supply vessel entering the PAA to deliver infrastructure to the HCV may be required.

Pre- and post-lay surveys will be conducted from vessel and ROV to assess seabed condition pre-installation and confirm infrastructure location post-installation.

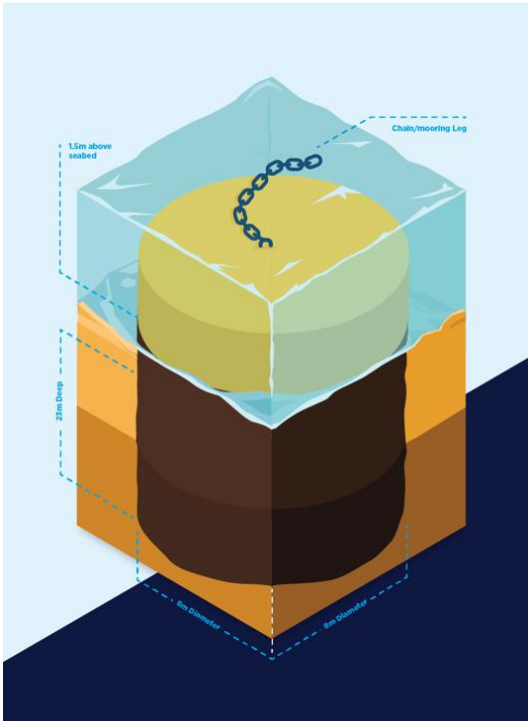


Figure 3-6: Suction pile diagram

3.11 Contingency Activities

3.11.1 Wet buckle of flowline

A wet buckle is an event that could occur during flowline installation and is typically caused by a loss of station keeping of the installation vessel and results in the flowline buckling at the touch down point on the seabed. To recover from this scenario, the damaged section of the flowline is removed, by cutting from the remainder of the flowline and moving out of the flowline route. Sediment relocation may be required to allow installation of the cutting tool. A pipeline recovery tool will then be installed on the cut end of the flowline section. Raw seawater ingress will be displaced by pigging with treated and filtered sea water, pumped using an ROV subsea skid via the associated FLET to preserve the wet-buckled flowline. Upon completion of this activity, the flowline is recovered to the installation

vessel, welded to a new section of flowline, and installation activities continued. The treated seawater would be discharged during FCG of the fully installed flowline, and replaced with new treated seawater for ongoing preservation. If the wet buckle occurs early in the process, the whole section may be removed and the process re-started, if appropriate.

3.11.2 Additional well jumper

Base case is to install eight 8″ 120 m flexible jumpers, although a ninth jumper, 900 m long, may be installed if an additional well is drilled.

3.11.3 Rigid spool installation

If, for any reason, the rigid spool becomes un-installable by the HCV or transport barge, an alternative option will be to use a HLV to perform the transportation and installation of the spool.

3.11.4 Span rectification

Flowlines have been engineered to reduce the requirement for span rectification and it is not anticipated to be required, although this will be confirmed post-installation. The span rectification process would involve placing grout bags under the span section; the empty bag moved into position using ROV, then filled with grout supplied from a mixing and pumping spread on the vessel via a downline. Small, prefilled bags can be installed using ROV or lowered to the seabed using a vessel crane. Following installation activities, concrete lines and equipment may be flushed clean, with wash-water discharged overboard. Typical grout volumes depend on the size of the span and may vary in weight from about 200–2000 kg per span.

3.12 Non-production phase and IMMR

Following installation of infrastructure, items will remain installed or wet-stored in a preserved state on the seabed, prior to commissioning, start-up and operations. Flowlines will be filled with treated seawater for preservation, until gas is introduced to the system. During this non-production phase, Inspection, Monitoring, Maintenance and Repair (IMMR) activities may be carried out as required any time throughout the life of this EP, post-infrastructure installation. This may include cleaning of marine growth (e.g. ROV water jet), sediment relocation, ROV inspections, infrastructure repair.

4 DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Overview

In accordance with regulations 13(2) and 13(3) of the Environment Regulations, this section describes the existing environment that may be affected by the activity (planned and unplanned, as described in **Section 3**), including details of the particular relevant values and sensitivities of the environment, which were used for the risk assessment.

The Environment that May Be Affected (EMBA) is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding environment. For this EP, the EMBA is the potential spatial extent of surface and in-water hydrocarbons at concentrations above ecological impact thresholds, in the event of the worst-case credible spill. The ecological impact thresholds used to delineate the EMBA are defined in **Section 6.8.1.3**. The worst-case credible spill scenario for this EP is the highly unlikely event of a loss of marine diesel during a vessel collision.

Woodside recognises that hydrocarbons may be visible beyond the EMBA at lower concentrations than the ecological impact thresholds defined in **Section 6.8.1.3**. These visible hydrocarbons are not expected to cause ecological impacts. In respect of this, an additional socio-cultural EMBA is defined, as the potential spatial extent within which social-cultural impacts may occur from changes to the visual amenity of the marine environment. Receptors relevant to the socio-cultural EMBA include Commonwealth and State marine protected areas (MPAs), National and Commonwealth Heritage Listed places, areas of tourism and recreation, and commercial and traditional fisheries. For this EP, the socio-cultural EMBA for surface hydrocarbons encompasses an area fully within the boundaries of the EMBA for ecological impacts. The EMBA and socio-economic EMBA are shown in **Figure 4-1** and described in **Table 4-1**.

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

Table 4-1: Hydrocarbon spill thresholds used to define 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.	NA
Dissolved	50 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note: A652993, April 2019). As dissolved hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors can be associated with ecological impacts. Therefore, dissolved hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		10 ppb This low exposure value establishes the planning area for scientific monitoring (based on potential for exceedance of water quality triggers) (NOPSEMA guidance note: A652993, April 2019). This area

Hydrocarbon Type	EMBA[1]	Socio-cultural EMBA[1]	Planning Area for Scientific Monitoring
Entrained	100 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note: A652993, April 2019). As entrained hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors can be associated with ecological impacts. Therefore, entrained hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		is described further in Appendix D: Figure 5-1. In the event of a spill, DNP will be notified of AMPs which may be contacted by hydrocarbons at this threshold (Table 7-7).
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 6.8.1.3

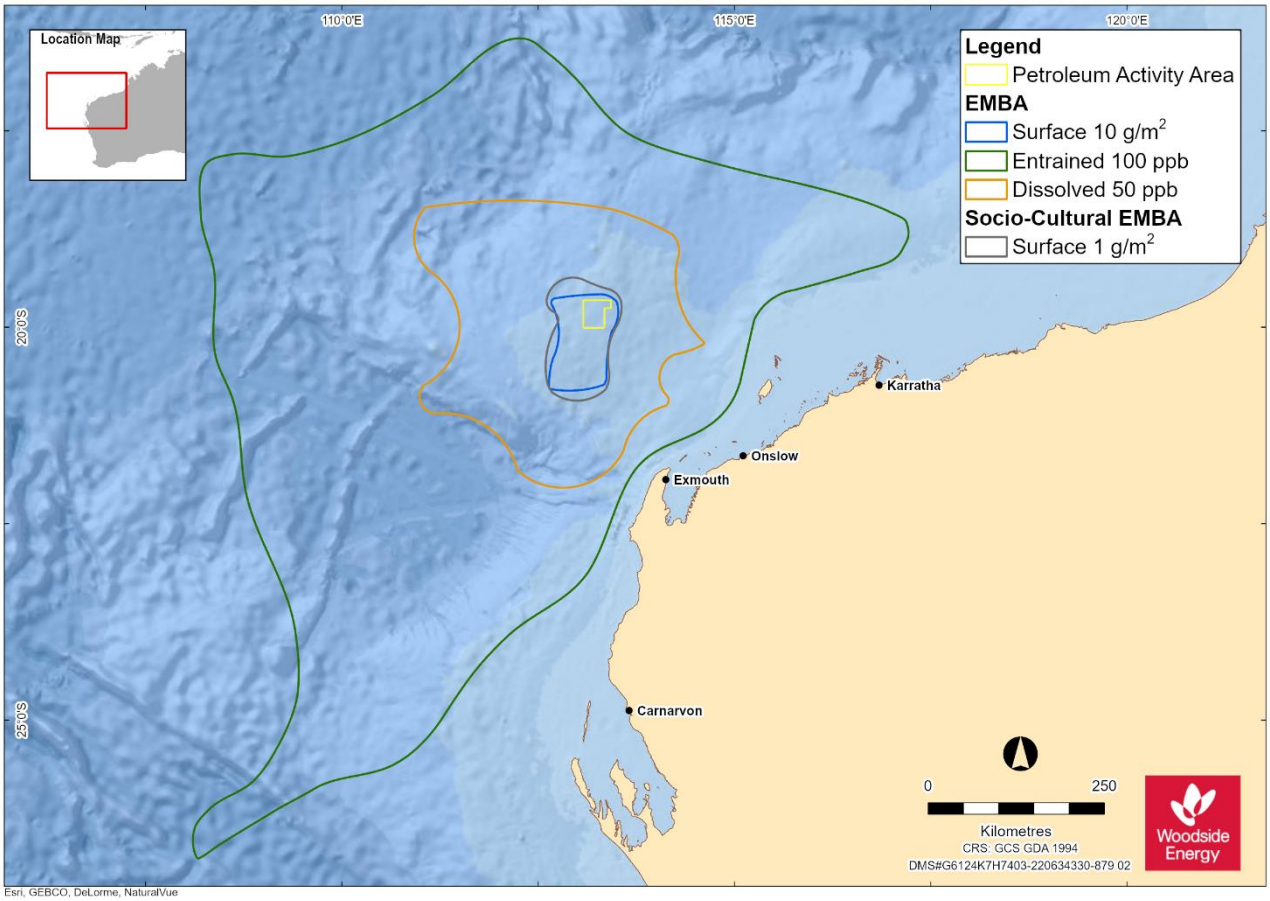


Figure 4-1: Environment that May Be Affected by the Petroleum Activities Program

4.2 Regional Context

The PAA occurs in Commonwealth waters off the north-west coast of Western Australia (WA), located in the North-west Marine Bioregion (NWMR) (IMCRA 4.0). Within the NWMR, the PAA lies within the Northern Carnarvon Basin on the Exmouth Plateau, about 375 km offshore from the Burrup Peninsula. The PAA overlaps with the Northwest Province and the EMBA partially overlaps with the Central Western Transition, Central Western Province, Northwest Shelf Province, Northwest Transition (**Figure 4-2**). Woodside's Description of Existing Environment (**Appendix I**) summarises the characteristics for the relevant marine bioregions.

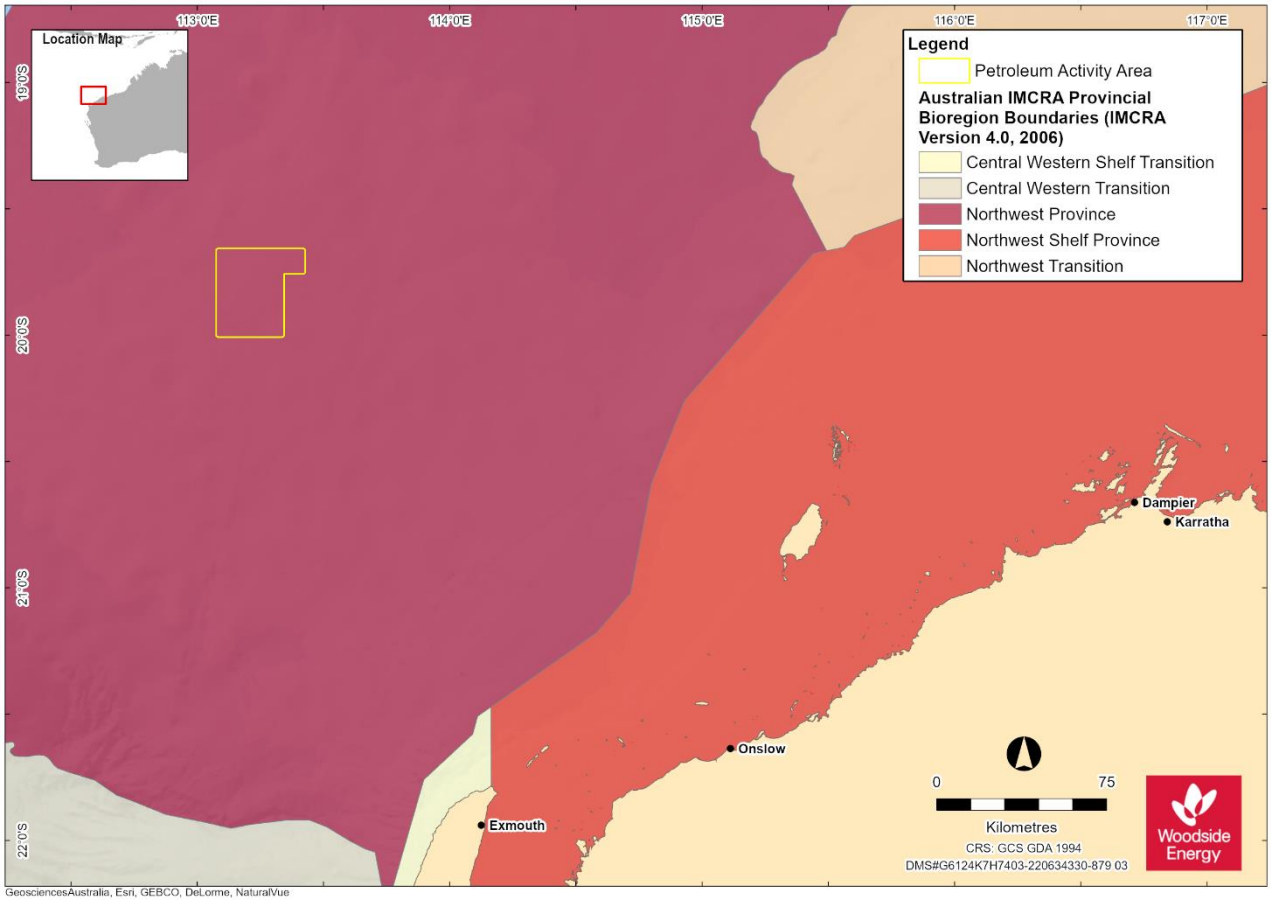


Figure 4-2: Location of the PAA and relevant marine bioregions

4.3 Matters of National Environmental Significance (EPBC Act)

Table 4-2 and **Table 4-3** summarise the matters of national environmental significance (MNES) overlapping the PAA and EMBA, respectively, according to Protected Matters Search Tool (PMST) results (**Appendix C**). It should be noted that the EPBC Act PMST is a general database that conservatively identifies areas in which protected species have the potential to occur.

Additional information on these MNES are provided in subsequent sections of this chapter.

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

MNES	Number	Relevant Section
World Heritage Properties	0	Section 4.9.1
National Heritage Places	0	Section 4.9.1
Wetlands of International Importance (Ramsar)	0	Section 4.9.1
Commonwealth Marine Area	1	Section 4.2
Listed Threatened Ecological Communities	0	Section 4.5
Listed Threatened Species	15	Section 4.6
Listed Migratory Species	26	Section 4.6

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

MNES	Number	Relevant Section
World Heritage Properties	0	Section 4.9.1
National Heritage Places	0	Section 4.9.1
Wetlands of International Importance (Ramsar)	0	Section 4.9.1
Commonwealth Marine Area	2	Section 4.2
Listed Threatened Ecological Communities	0	Section 4.5
Listed Threatened Species	36	Section 4.6
Listed Migratory Species	54	Section 4.6

4.4 Physical Environment

Water depths of the PAA range from approximately 900 m to 1000 m. The shallowest waters are approximately in the centre of the PAA, with a gradual increase in depth to the north/north-west and also to the south/south-east (**Figure 4-3**). To the centre and west of the PAA, craters (up to 400 m across and 10 m deep) and similar pockmarks (metres to tens of metres across) have been identified through geophysical surveys (Fugro, 2010). The seafloor exhibits gradients less than 1^{o} but extends to about 15^{o} on the edge of craters (Fugro, 2010). These crater and pockmark formations may be associated with hydrocarbon seeps and associated authigenic carbonate formations (Fugro, 2010).

Marine sediment quality surveys within the Scarborough (WA-61-L[3]) title were undertaken during the 2012/2013 wet and dry seasons (ERM, 2013). The ERM marine investigation included sampling at a number of sampling sites, to:

- provide a broad characterisation of the habitats within WA-61-L
- achieve spatial coverage across WA-61-L

[3] Note that the WA-1-R title expired on 1/11/2020, and was replaced by WA-61-L.

- provide a representative selection of the various topographic features and corresponding benthic habitats (i.e. crater/pockmark versus non-crater areas).

Key results included:

- All the sediment samples collected were predominantly (≥97% w/w) composed of clay and silt; and only small amounts (1–3% w/w) of sand and shell were detected.
- Generally, low concentrations of metals and nutrients were detected. With the exception of nickel, metal concentrations were below the sediment default guideline values (DGVs) (Simpson, 2013) for analytes with defined DGVs (arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc). Nickel concentrations were below the high guideline value (GV).
- No hydrocarbons were detected.

Although crater and pockmark formations have been identified in the EMBA, which have been associated with hydrocarbon seeps and authigenic carbonate formations (Fugro, 2010), the absence of hydrocarbons in sediment samples indicates the lack of recent hydrocarbon seep activity in the locations sampled (ERM, 2013).

Water quality in the PAA is typical of a tropical offshore environment. Much of the surface water in this area is nutrient poor, transported from the Indonesian Throughflow (ITF) and has low primary productivity.

The marine water quality of the offshore environment of the Exmouth Plateau was measured by collecting triplicate water samples at three stations per 15 sampling sites (across two seasons) (ERM, 2013). Water profiling and water quality sampling was undertaken in the 2012/2013 wet and dry seasons. The main findings include:

- The deeper waters had significantly lower dissolved oxygen concentrations (about 23%) compared to the oxygen-saturated (≥100%) surface waters.
- Generally low concentrations of metals, nutrients and chlorophyll-a were detected. With the exception of cobalt, copper and zinc, mean metal concentrations throughout WA-61-L during both the wet and dry season studies were below the ANZECC guidelines trigger value for 95% species protection (ANZECC and ARMCANZ 2000).
- Total suspended solid mean concentrations were higher during the wet season (22,450 µg/L) than the dry season study (4000 µg/L) and showed variability across sites and throughout the water column.
- No hydrocarbons were detected.

Results from the studies indicated that the water quality within the WA-61-L title is generally typical of the NWMR's tropical deep-water environment (ERM, 2013).

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

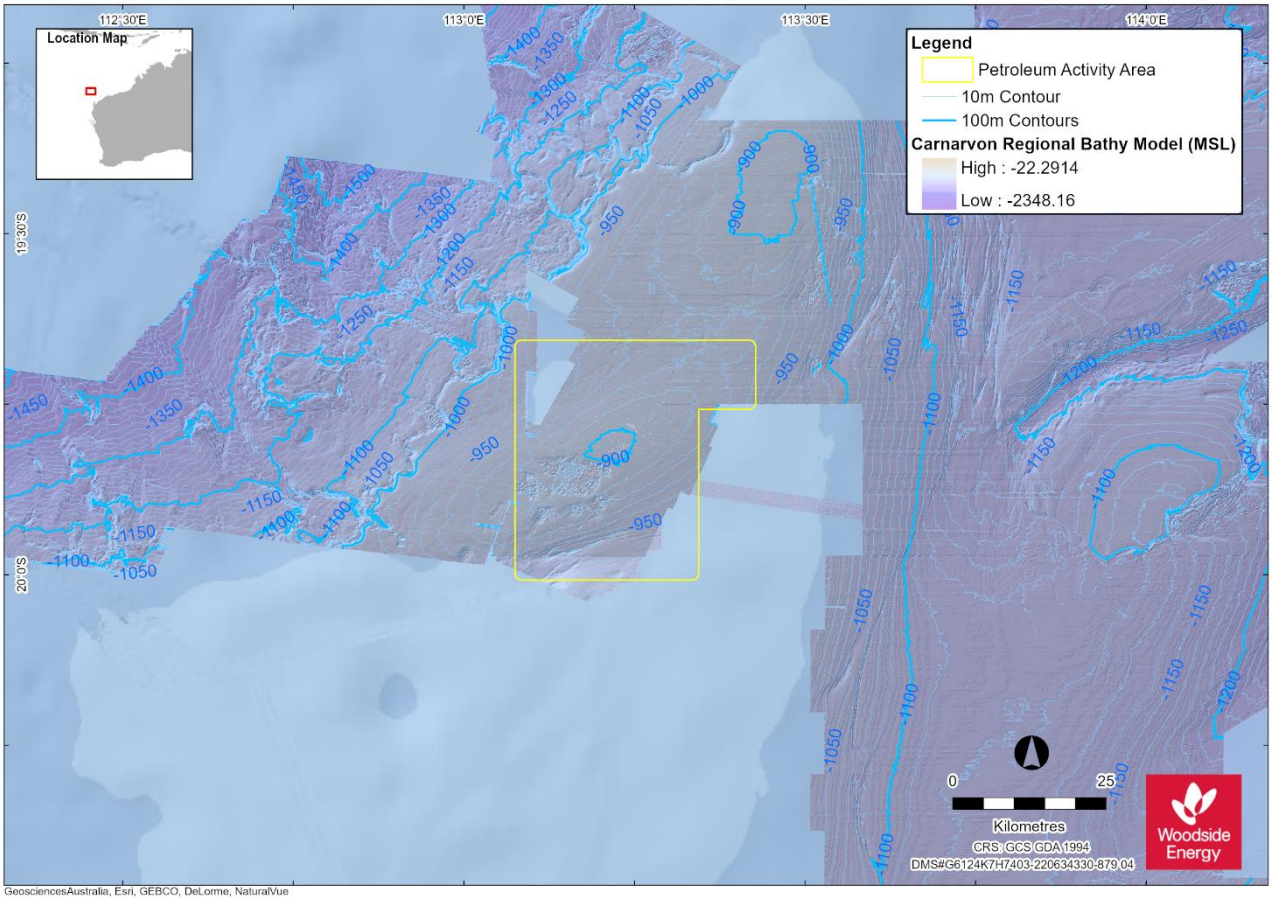


Figure 4-3: Bathymetry of the PAA

4.5 Habitats and Biological Communities

The seafloor in the PAA is characterised by sparse marine life dominated by motile organisms (ERM, 2013). This soft bottom habitat also supports patchy distributions of mobile epibenthos, such as sea cucumbers, ophiuroids, echinoderms, polychaetes and sea-pens (DEWHA, 2008a). Bivalve shell debris and bacterial mats (both with low percent cover) were the only identified features that may be indicative of historic hydrocarbon seep activity. A benthic infauna analysis reported by ERM in 2013 provided no evidence of the presence of unique hydrocarbon seep chemosynthetic benthic communities, which are typically characterised by species from the family Dorvilleidae (ERM, 2013; Thornhill et al., 2012).

Seabed habitat is characterised by sparse marine life dominated by mobile benthic biota (ERM, 2013). The benthic biota are predominantly deposit feeders such as epifauna (living on the seabed): shrimp (crustaceans) and sea cucumbers (echinoderms), and infauna (living within the surface sediments) small, burrowing worms (polychaetes) and crustaceans (ERM, 2013). Bioturbation traces (seabed surface sediment animals trails, mounds and burrows) are characteristic of such deepwater benthic habitats and were recorded during baseline survey work (ERM, 2013) and are thought to be common within the PAA and EMBA. The seabed bioturbation indicates the presence of benthic biota (epifauna and infauna) including echinoderms, crustaceans and echiurans (spoon worms) and annelids (polychaetes) (ERM, 2013).

Sampling within the Permit Area returned low phytoplankton densities (ERM, 2013). Seasonal variation was observed in the samples with total recorded taxa, species richness and species diversity (Shannon-Weiner) being significantly greater in the dry season than in the wet season

(ERM, 2013). Dinoflagellates were the most abundant group within wet season study, and diatoms were generally the most abundant group in dry season study (ERM, 2013).

Similarly, greater species abundance and diversity was recorded in zooplankton samples during the dry season compared to the wet season (ERM, 2013). Copepods were the most dominant taxonomic group during both studies in terms of abundance and concentrations, with other zooplankton including ostracods, molluscs (pteropods), euphausiids (krill) and larvaceans also being identified in relatively abundant amounts (ERM, 2013).

Concentrations of fish larvae were similar in both wet and dry season samples. For both seasons ichthyoplankton communities largely comprised the larvae of meso-pelagic fishes (Myctophidae [lantern fishes] and Gonostomatidae [bristlemouths]) (ERM, 2013).

It is noted that these survey findings do not reflect the productivity trends reported in scientific literature for the region (DEWHA, 2008a; Brewer et al., 2007), whereby productivity is typically greater during the wet season when the weakening of surface currents allows for increased upwelling. However, the findings do indicate that productivity remains low across the seasons and that while seasonal variations in plankton species composition potentially occurs, overall variations in abundance are likely to be minor (ERM, 2013).

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

Table 4-4: Habitats and communities within the EMBA

Habitat/community	Key locations within the EMBA
Marine primary producers	
Coral	Key locations for coral/habitat communities within the EMBA are at Rankin Bank, approximately 233 km east of the PAA. Refer to **Appendix H: Section 4** for a description of coral communities in the NWMR.
Seagrass beds and macroalgae	There are no recognised key locations for seagrass beds and macroalgae habitat/communities within the EMBA.
Mangroves	Shoreline accumulation of hydrocarbons is not expected above ecological thresholds and therefore no mangrove systems occur within the EMBA.
Sandy beaches	Shoreline accumulation of hydrocarbons is not expected above ecological thresholds and therefore no sandy beaches occur within the EMBA.
Salt marshes	Shoreline accumulation of hydrocarbons is not expected above ecological thresholds and therefore no sandy beaches occur within the EMBA.
Other communities and habitats	
Plankton	Plankton within the EMBA is expected to reflect the conditions of the NWMR. Primary productivity of the NWMR appears to be largely driven by offshore influences, with periodic upwelling events and cyclonic influences driving coastal productivity with nutrient recycling and advection. Refer to **Appendix H: Section 4.3** for a description of planktonic communities in the NWMR.
Pelagic and demersal fish populations	In the EMBA, fish diversity and abundance is typically correlated with habitat distribution, with complex habitats, such as coral and rocky reefs, hosting more diverse and abundant assemblages. Notable habitats hosting diverse fish assemblages include the Continental slope demersal fish communities KEF. Refer to **Appendix H: Section 5.5** for a description of pelagic and demersal fish populations in the NWMR.
Epifauna and infauna	The EMBA contains deep water habitats dominated by soft, fine grain sediments and sparse benthic biota. The benthic communities are

Habitat/community	Key locations within the EMBA
	characterised by benthic filter feeders and other epifauna, and infaunal bioturbators. Refer to **Appendix H: Section 5.5** for a description of epifauna and infauna in the NWMR.

4.6 Protected Species

A total of 64 EPBC Act listed species considered to be MNES were identified as potentially occurring within the EMBA, of which a subset of 29 species were identified as potentially occurring within the PAA. The full list of marine species identified from the PMST reports is provided in **Appendix C**, including several MNES that are not considered to be credibly impacted (e.g. terrestrial species within the EMBA). Two conservation dependent species have also been identified with a potential to occur within the PAA and / or EMBA, and one within the EMBA. One of those species, southern bluefin tuna, has a spawning area within the South of Java Island Ecologically or Biologically Significant Marine Areas (EBSA) directly to the north of the PAA (**Figure 4-4**).

Species identified as potentially occurring within the PAA and EMBA and Biologically Important Areas (BIAs) or Habitat Critical to their Survival (Habitat Critical) that overlap the PAA and EMBA are listed in **Table 4-5** to **Table 4-13**, and a description of species is included in **Appendix I**. **Figure 4-5** to **Figure 4-11** show the spatial overlap with relevant BIAs and Habitat Critical areas and the PAA.

4.6.1 Fish, Sharks and Rays

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	
				PAA	***EMBA***
Carcharodon carcharias	White shark	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat known to occur within area
Carcharhinus longimanus	Oceanic whitetip shark	Vulnerable	Migratory	Species or species habitat may occur within area	Species or species habitat likely to occur within area
Thunnus maccoyii	Southern bluefin tuna	Conservation Dependent	N/A	Breeding known to occur within area	Breeding known to occur within area
Sphyrna lewini	Scalloped hammerhead shark	Conservation Dependent	N/A	Species or species habitat may occur within area	Species or species habitat known to occur within area
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Isurus paucus	Longfin mako shark	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Mobula birostris	Giant manta ray	N/A	Migratory	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
Pristis	Freshwater sawfish	Vulnerable	Migratory	N/A	Species or species habitat likely to occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Pristis zijsron	Green sawfish	Vulnerable	Migratory	N/A	Species or species habitat known to occur within area
Rhincodon typus	Whale shark	Vulnerable	Migratory	N/A	Foraging, feeding or related behaviour known to occur within area
Carcharias taurus (west coast population)	Grey nurse shark	Vulnerable	N/A	N/A	Species or species habitat known to occur within area
Centrophorus zeehaani	Southern dogfish	Conservation Dependent	N/A	N/A	Species or species habitat likely to occur within area
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	N/A	Species or species habitat known to occur within area
Lamna nasus	Porbeagle	N/A	Migratory	N/A	Species or species habitat may occur within area
Mobula alfredi as *Manta alfredi*	Reef manta ray	N/A	Migratory	N/A	Species or species habitat known to occur within area

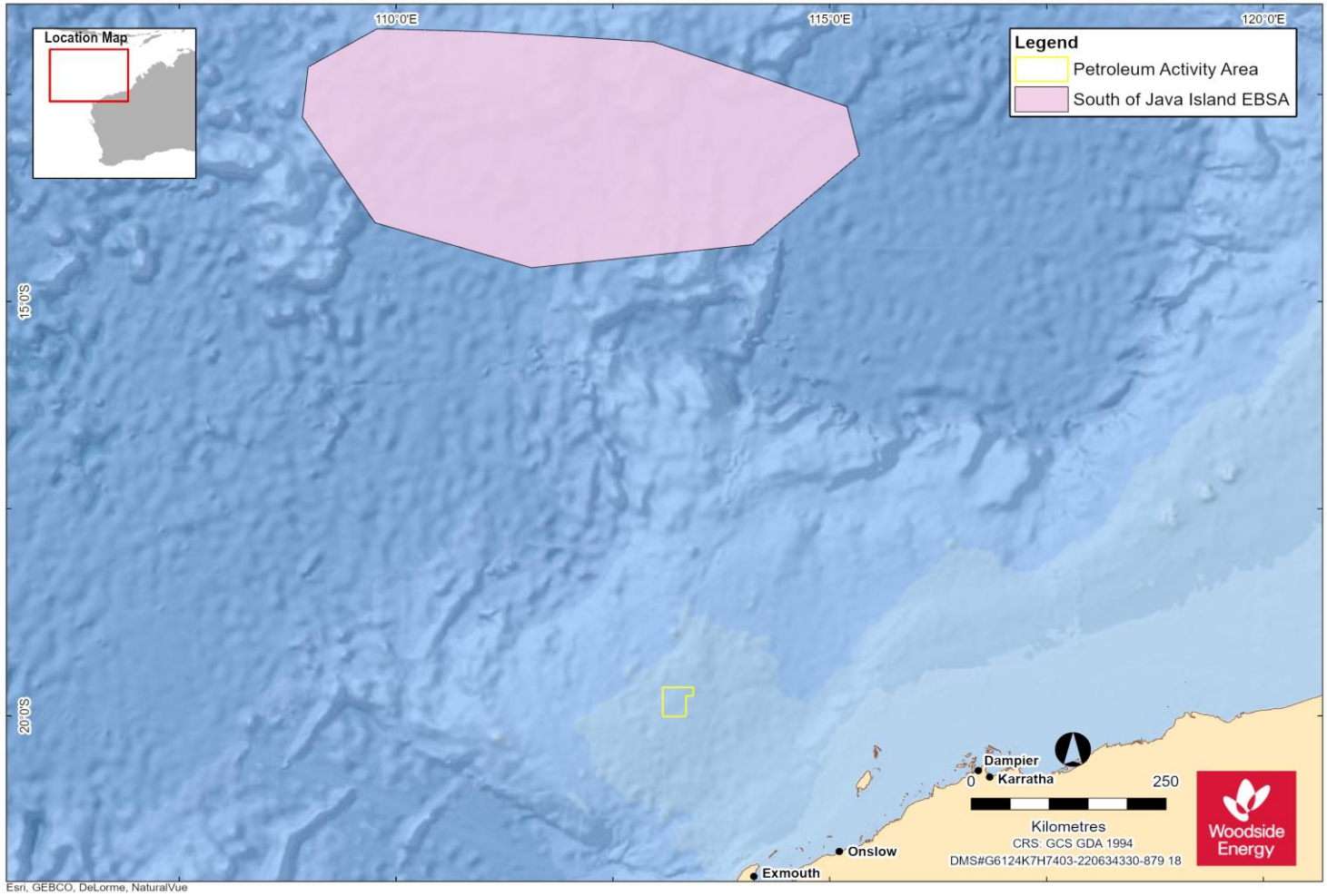


Figure 4-4: Southern bluefin tuna spawning area – South of Java Island EBSA[1]

1 EBSA – Ecologically or Biologically Significant Marine Areashttps://www.cbd.int/ebsa/

Table 4-6: Fish, shark and ray BIAs within the EMBA

Species	BIA type	Approximate distance (km) and direction from PAA
Whale shark	Foraging (Northward from Ningaloo along 200 m isobath)	165 km east

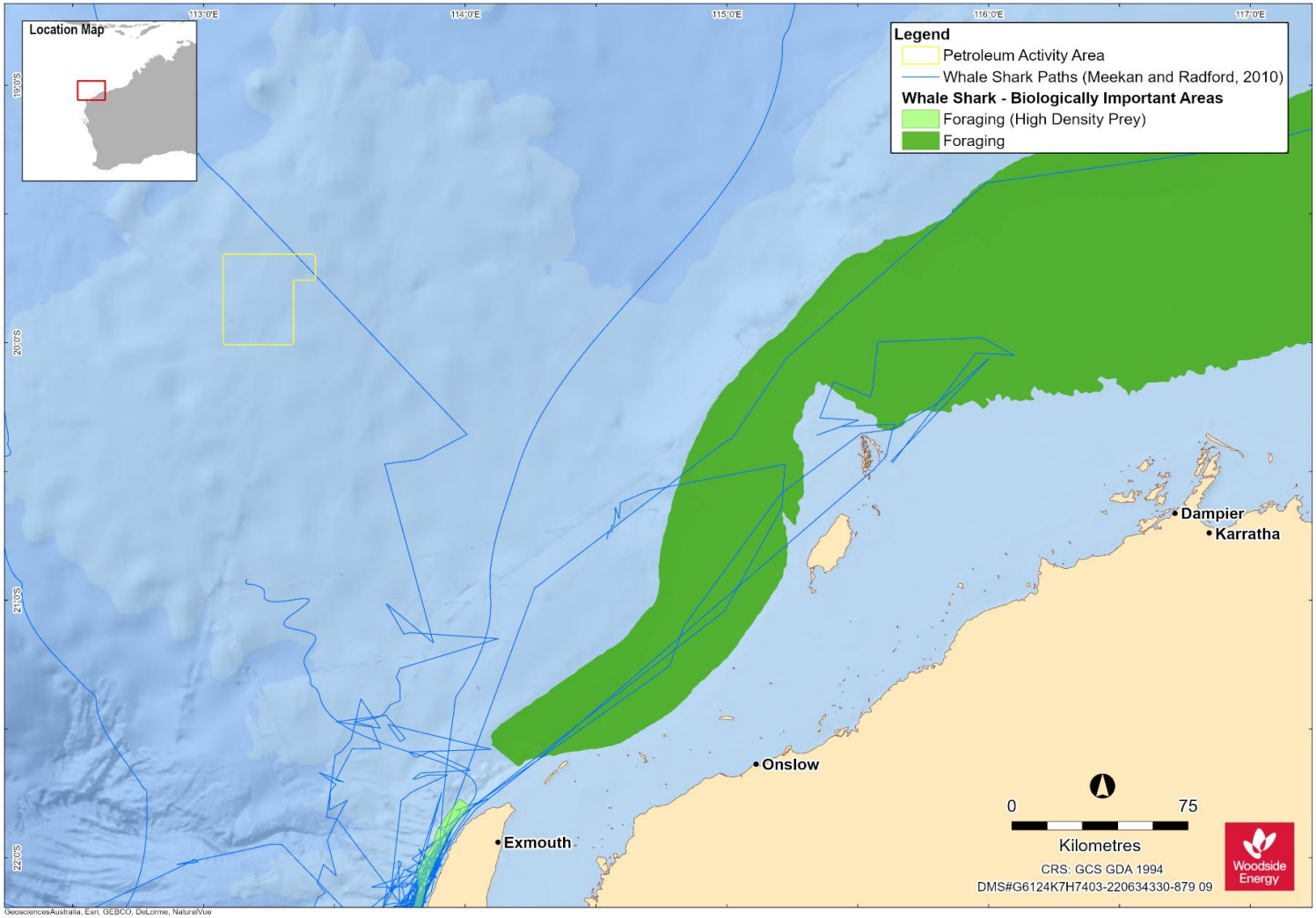


Figure 4-5: Whale shark BIAs and satellite tracks (Meekan and Radford, 2010)

4.6.2 Marine Reptiles

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	
				PAA	***EMBA***
Caretta	Loggerhead turtle	Endangered	Migratory	Species or species habitat likely to occur within area	Congregation or aggregation known to occur within area
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Species or species habitat 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	Congregation or aggregation known to occur within area
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Species or species habitat likely to occur within area	Congregation or aggregation known to occur within area
Natator depressus	Flatback turtle	Vulnerable	Migratory	Species or species habitat likely to occur within area	Congregation or aggregation known to occur within area
Aipysurus foliosquama	Leaf-scaled seasnake	Critically Endangered	N/A	N/A	Species or species habitat known to occur within area
Aipysurus apraefrontalis	Short-nosed seasnake	Critically Endangered	N/A	N/A	Species or species habitat known to occur within area

Table 4-8: Marine turtle BIAs within or adjacent to the EMBA

Species	BIA type	Approximate distance (km) and direction from PAA
Flatback turtle	Internesting buffer (Montebello Island – Hermite Island, NW Island, Trimouille Island	165 km east
	Internesting buffer (Thevernard Island – South coast)	167 km south-east
Green turtle	Internesting buffer (Montebello Islands)	207 km east
	Internesting buffer (Montebello Island – Hermite Island, NW Island, Trimouille Island	211 km east
	Internesting buffer (Middle Is. West Coast Barrow Island West Coast and North Coast)	202 km south-east
	Internesting buffer (North and South Muiron Islands)	187 km south-east
Loggerhead turtle*	Internesting buffer (Montebello Islands)	212 km east
Hawksbill turtle*	Internesting buffer (Montebello Island – Hermite Island, NW Island, Trimouille Island	211 km east
	Internesting buffer (Barrow Island)	202 km south-east

**Loggerhead and Hawksbill BIA are adjacent to the EMBA only*

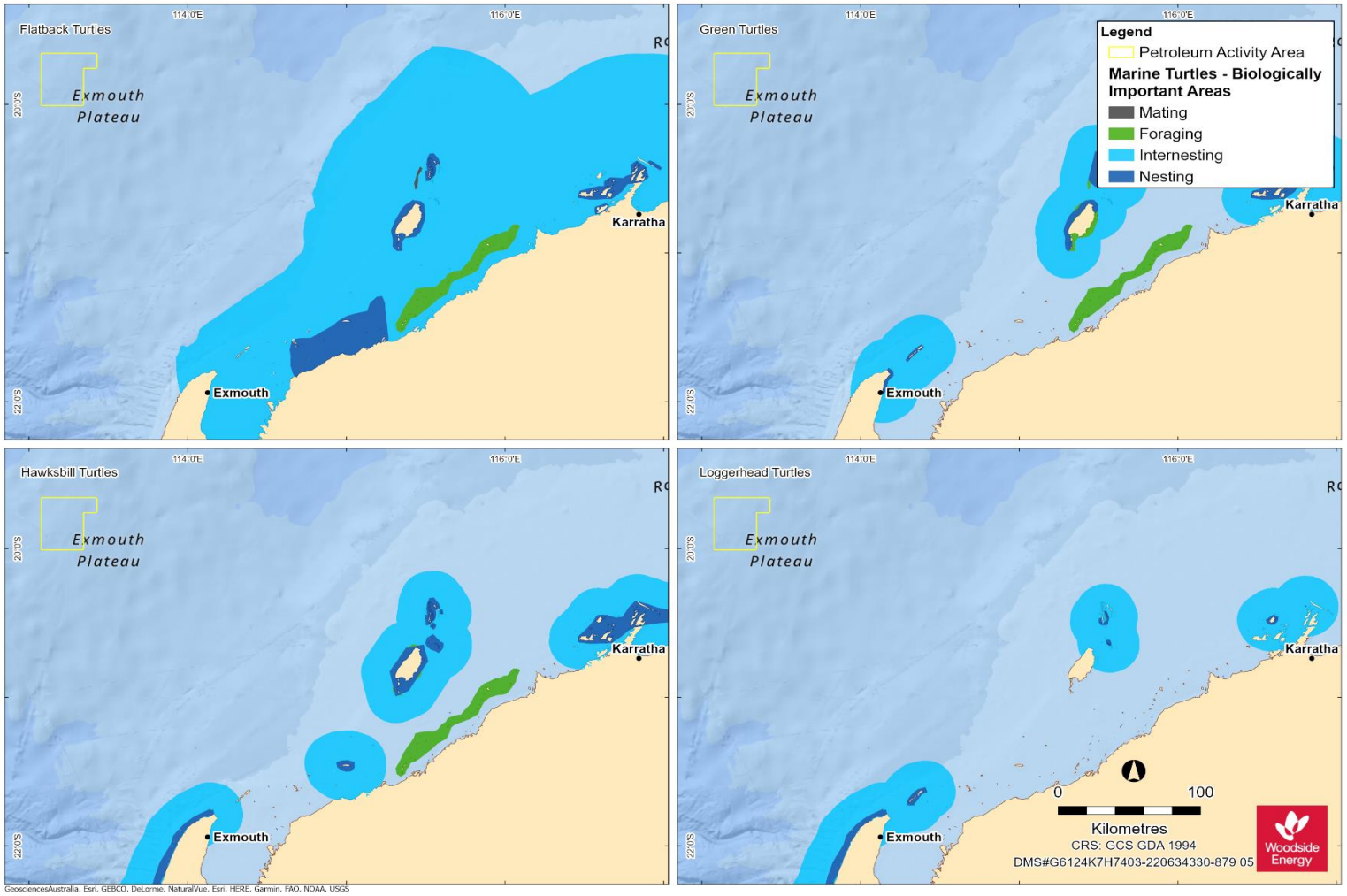


Figure 4-6: Marine turtle BIAs

Table 4-9: Marine turtle Habitat Critical within or adjacent to the EMBA

Species	Overlaps with EMBA	Genetic Stock	Nesting locations	Approximate distance of area from PAA	Internesting buffer	Nesting period	Hatching period
Flatback turtle	✓	Pilbara	Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island	198 km east	60 km	Oct – Mar (peak: Nov-Jan)	Feb- Mar
Hawksbill turtle	×	Western Australia	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands	215 km east	20 km	All year (peak: Oct – Jan)	All year (peak: Dec – Feb)
Green turtle	×	North West Shelf	Barrow Island, Montebello Islands, Serrier Island and Thevenard Island	215 km east	20 km	Nov – Mar (peak: Dec-Feb)	Jan - May (peak: Feb – Mar)

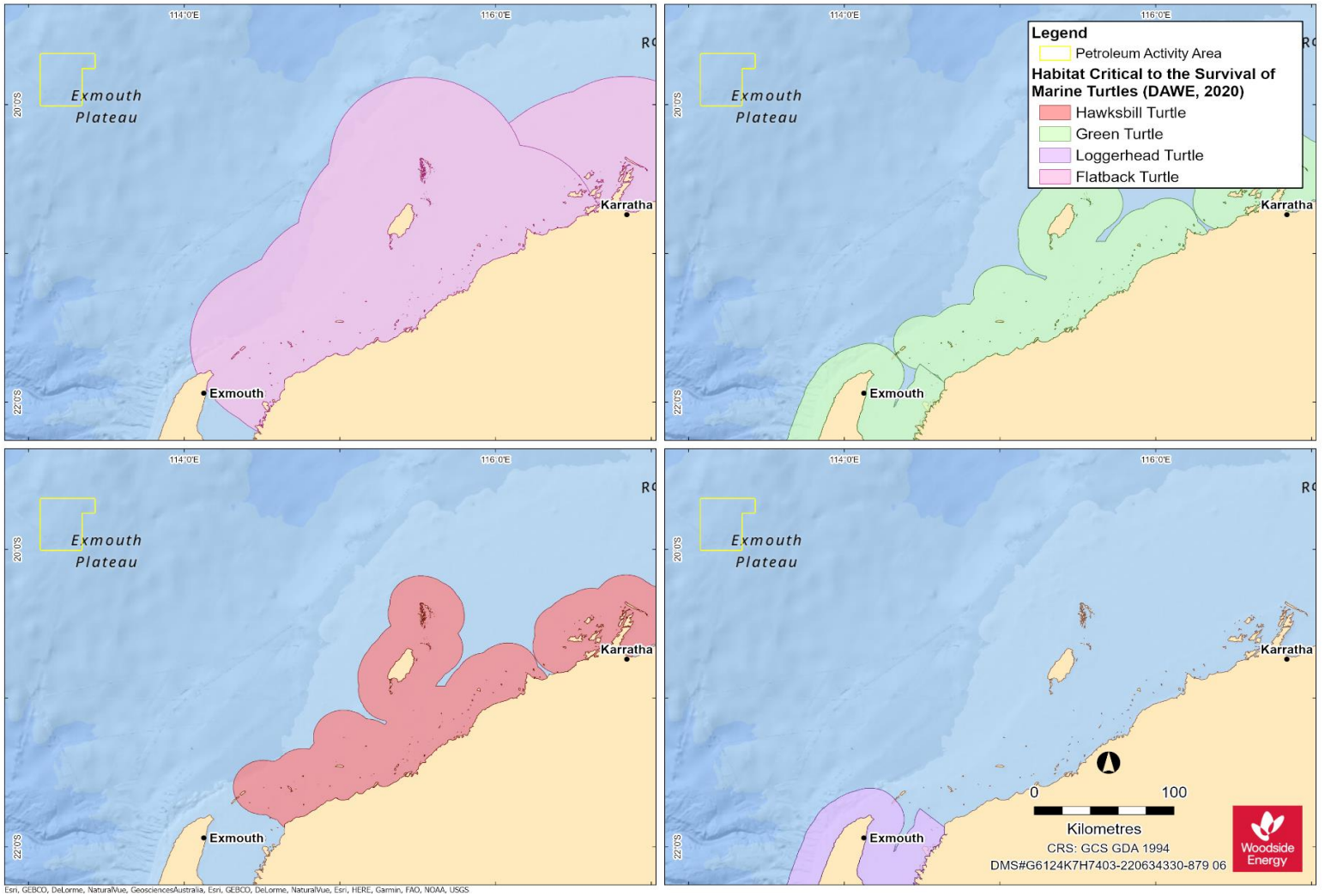


Figure 4-7: Habitat critical to the survival of marine turtles

4.6.3 Marine Mammals

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	
				PAA	***EMBA***
Balaenoptera musculus	Blue whale	Endangered	Migratory	Species or species habitat likely to occur within area	Migration route known to occur within area
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur within area
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Species or species habitat may occur within area	Breeding known 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
Physeter macrocephalus	Sperm whale	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Orcinus orca	Killer whale, orca	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Eubalaena australis	Southern right whale	Endangered	Migratory	N/A	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
Orcaella heinsohni	Australian Snubfin Dolphin	N/A	Migratory	N/A	Species or species habitat may occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Sousa sahulensis	Australian humpback dolphin	N/A	Migratory	N/A	Species or species habitat likely occur within area
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	N/A	Migratory	N/A	Species or species habitat known to occur within area

**Note: Dolphins of unconfirmed species (potentially Risso's or spinner dolphins) also present in the area (McCauley, 2011b)*

Table 4-11: Marine mammal BIAs within the EMBA

Species	BIA type	Approximate distance (km) and direction from PAA
Blue and pygmy blue whales	Migration (Augusta to Derby)	35 km east
	Foraging (Ningaloo)	184 km south
Humpback whale	Migration (north and south) (Kimberley region to south of Shark Bay)	156 km south-east

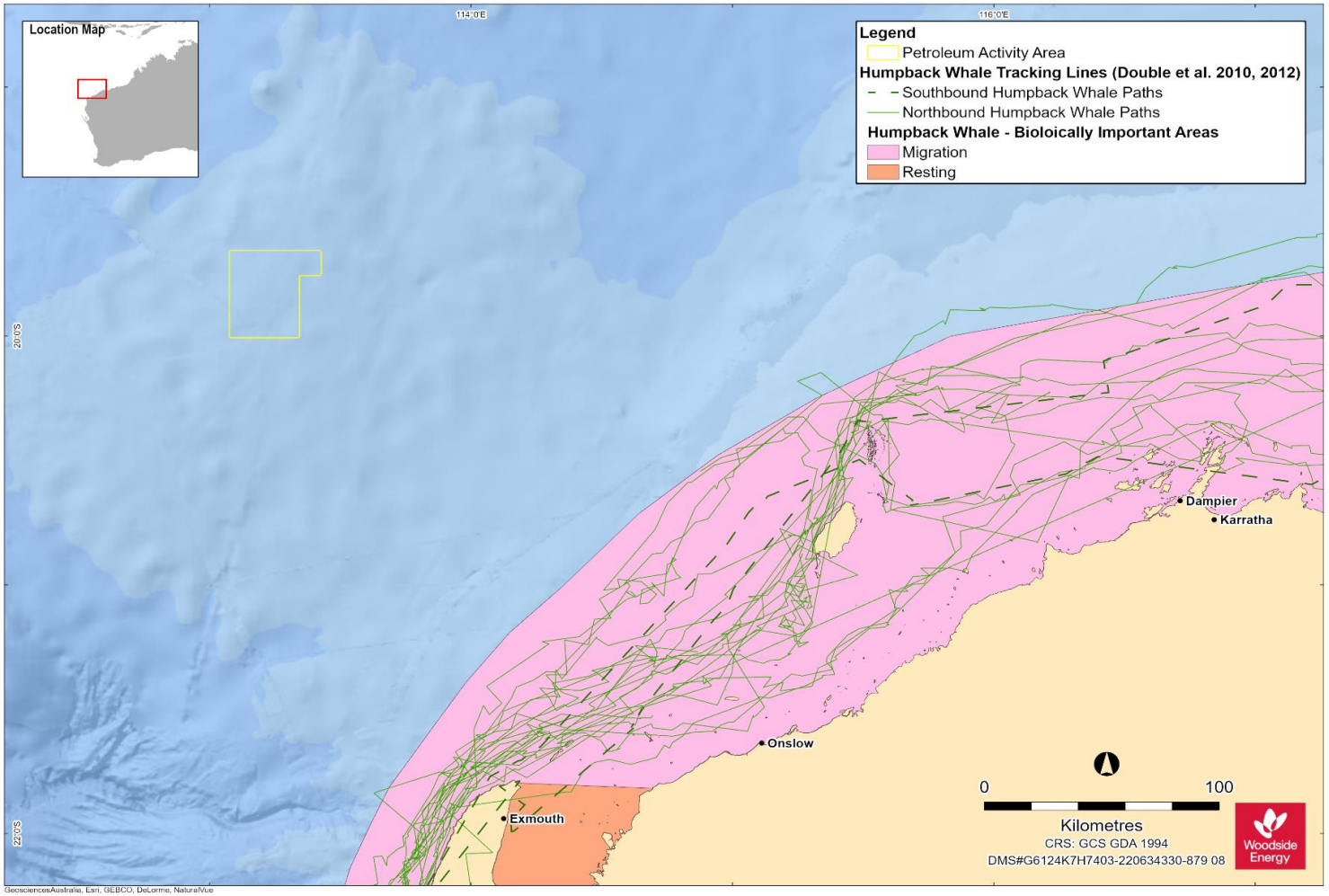


Figure 4-8: Humpback whale BIAs and satellite tracks (Double et al. 2010, 2012)

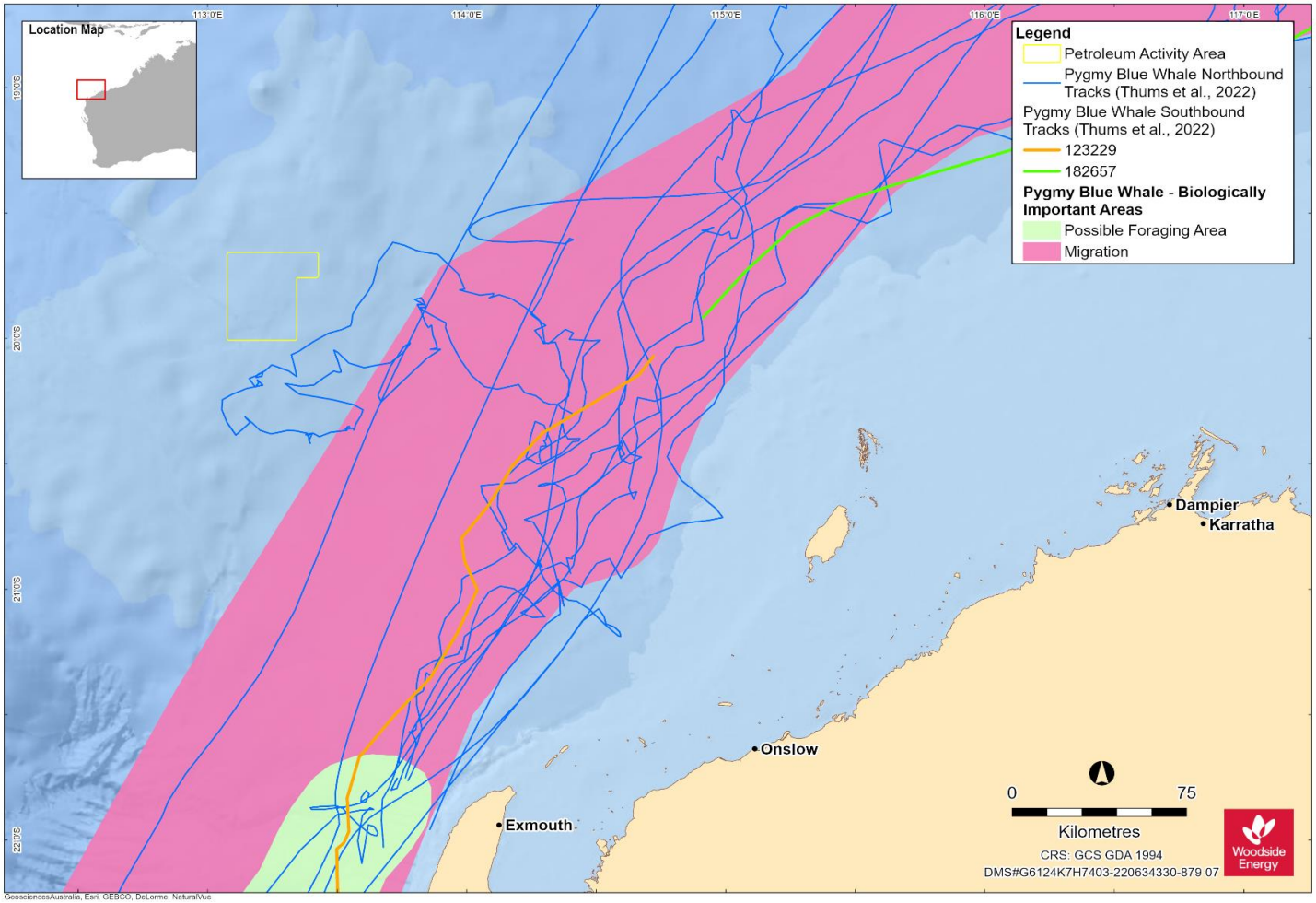


Figure 4-9: Pygmy blue whale BIAs and distribution range

Note: as per the NCVA and Blue Whale Conservation Management Plan (BWCMP), respectively) with reference to the PAA and the 20 tracks of satellite tagged pygmy blue whales recorded in the NWMR, of the 22 tracks presented in Thums et al. (2022)

Pygmy Blue Whales

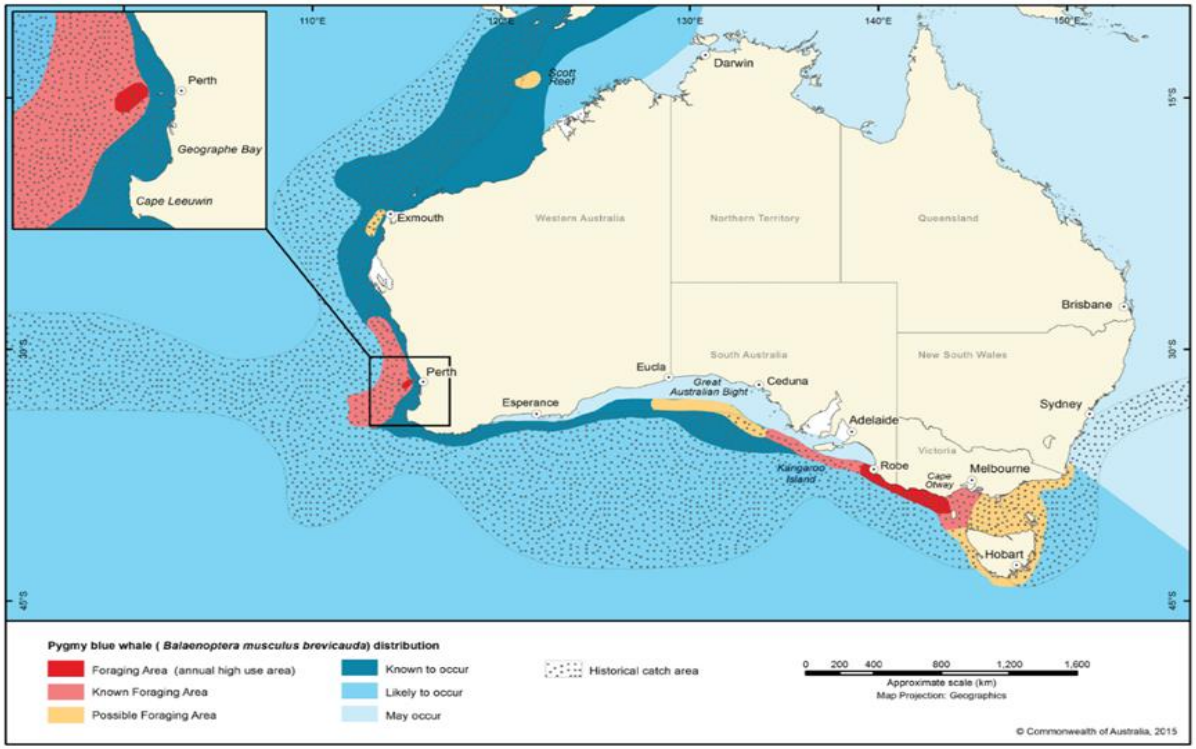
The blue whale (*Balaenoptera musculus*) is currently listed as Endangered, Migratory and Cetacean under the EPBC Act and Endangered under the WA Biodiversity Conservation Act 2016 (BC Act, September 2018).

The important biological habitats for critical life stages of the pygmy blue whale life cycle are presented in the Blue Whale Conservation Management Plan (CMP) (CoA, 2015a) and the National Conservation Values Atlas (NCVA). The PAA is located ~35 km west of the western edge of the migration BIA (**Figure 4-9)** and overlaps the broader pygmy blue whale distribution BIA (**Figure 4-10**).

The pygmy blue whale distribution range is a spatially defined area where pygmy blue whales are known to occur based on direct observations, satellite tagged whales or based on acoustic detections (Commonwealth of Australia, 2015). Thums et al. (2022) acknowledged that the majority of important migration areas for north-west Australia were encompassed by the pygmy blue whale migration BIA, as shown by 20 tracks for northbound pygmy blue whale, as presented in **Figure 4-9**. Furthermore, the analysis identified areas off from Ningaloo Reef to the Rowley Shoals as important for foraging (and/or breeding/resting) using the overlay of three modelled metrics (occupancy, number of whales and move persistence) by Thums et al. (2022). These include areas within and to the west of the migration BIA. The possibility that some migrating pygmy blue whales could be opportunistically foraging to the west of the migration BIA is supported by the track of one northbound individual tagged off the North West Cape in early June 2020. This tagged whale spent about 486 hours (20 days) in what appeared to be opportunistic foraging movement behaviour (Thums et al. 2022; AIMS, 2022), over an area that included time in the southern area of the Exmouth Plateau and within the migration BIA, refer to **Figure 4-9**. The area the whales have been shown to fan out and migrate beyond the BIA (Thums et al. (2022) is north of the PAA. Two southbound tracked whales also travelled predominantly within the migration BIA (refer to **Figure 4-9**).

Considering the proximity of the pygmy blue whale migration BIA to the PAA (~35 km), as well as the recorded presence of an individual, within the distribution range (~5km from the PAA), it is possible that individuals may transit in and around the PAA during migratory periods. However, only transient individuals or small groups are expected occasionally during the north and south bound migratory seasons (April to July and October to January, respectively) (McCauley, 2011, Gavrilov et al. 2018; Thums et al., 2022).

The Exmouth Plateau KEF (refer to **Section 4.7**) is an area of localised upwelling and may be a source of food for occasional pygmy blue whale foraging. Migrating pygmy blue whales display predominantly relatively fast, directed travel (mean travel rate 2.8±0.8 km hr^{-1}) during the northbound peak period of May and June. This is indicating limited foraging behaviour; however it is interspersed with relatively short periods of slower speeds which may be indicative of opportunistic foraging (Thums et al., 2022). By contrast, acoustic detection (McCauley, 2011) suggests that whales are travelling faster during the southbound migration than during the northbound migration. Thums et al. (2022) also noted the rate of southbound travel was faster than on the northern migration (based on the tracks of two whales). However, short periods of putative foraging was noted for one whale.



Foraging Area (Annual high use area)	Blue whales are regularly observed feeding on a seasonal basis
Known Foraging Area	Known foraging occurs in these areas but is highly variable both between and within seasons
Possible Foraging Area	Evidence for feeding is based on limited direct observations or through indirect evidence, such as occurrence of krill in close proximity of whales, or satellite tagged whales showing circling tracks. Blue whales travel through on a seasonal basis, possibly as part of their migratory route

Known to occur	Blue whales are known to occur based on direct observations, satellite tagged whales or based on acoustic detections
Likely to occur	Blue whales are likely to occur based on occasional observations in the area and nearby areas
May occur	Evidence for the presence of blue whales through strandings or rare observations
Historical catch area	Blue whales were caught during the whaling period based on whaling data

Figure 4-10: Important foraging and areas of occurrence for pygmy blue whales as presented in the Blue Whale Conservation Plan

Source: Commonwealth of Australia, 2015
Note: Known to occur area in the BWCMP is the same as the distribution range presented in the National Conservation Values Atlas.

4.6.4 Seabirds and Migratory Shorebirds

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Macronectes giganteus	Southern giant petrel	Endangered	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Phethon 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
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat known to occur within area
Fregata ariel	Lesser frigatebird	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat likely 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
Diomedea amsterdamensis	Amsterdam albatross	Endangered	Migratory	N/A	Species or species habitat likely to occur within area
Diomedea exulans	Wandering albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area

[4] N.B. The wedge-tailed shearwater was not identified in the PMST as potentially occurring within the EMBA; however, given a BIA for wedge-tailed shearwater breeding partially overlaps the EMBA, it is considered possible that the species may be encountered within the EMBA

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Macronectes halli	Northern giant petrel	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Thalassarche cauta	Shy albatross	Endangered	Migratory	N/A	Species or species habitat may occur within area
Thalassarche melanophris	Black-browed albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Thalassarche steadi	White-capped albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Thalassarche carteri	Indian yellow-nosed albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Thalassarche impavida	Campbell albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur within area
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	N/A	Foraging, feeding or related behaviour likely to occur within area
Papasula abbotti	Abbott's booby	Endangered	N/A	N/A	Species or species habitat may occur within area
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Breeding known to occur within area
Fregata minor	Great frigatebird	N/A	Migratory	N/A	Species or species habitat may occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	N/A	Foraging, feeding or related behaviour likely to occur within area
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	N/A	Species or species habitat likely to occur within area
Onychoprion anaethetus	Bridled tern	N/A	Migratory	N/A	Foraging, feeding or related behaviour likely to occur within area
Sterna dougallii	Roseate tern	N/A	Migratory	N/A	Breeding likely to occur within area
Pandion haliaetus	Osprey	N/A	Migratory	N/A	Species or species habitat known to occur within area
Migratory Shorebirds					
Calidris canutus	Red knot, knot	Endangered	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Calidris acuminata	Sharp-tailed sandpiper	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may 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 name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Numenius madagascariensis	Eastern curlew	Critically Endangered	Migratory	N/A	Species or species habitat may occur within area
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	N/A	Species or species habitat may occur within area

Table 4-13: Seabird BIAs within the EMBA

Species	BIA type	Approximate distance (km) a direction from PAA
Wedge-tailed shearwater	Breeding and foraging (Pilbara coast)	127 km south-east
Roseate tern	Breeding and foraging (Ningaloo)	245 km south

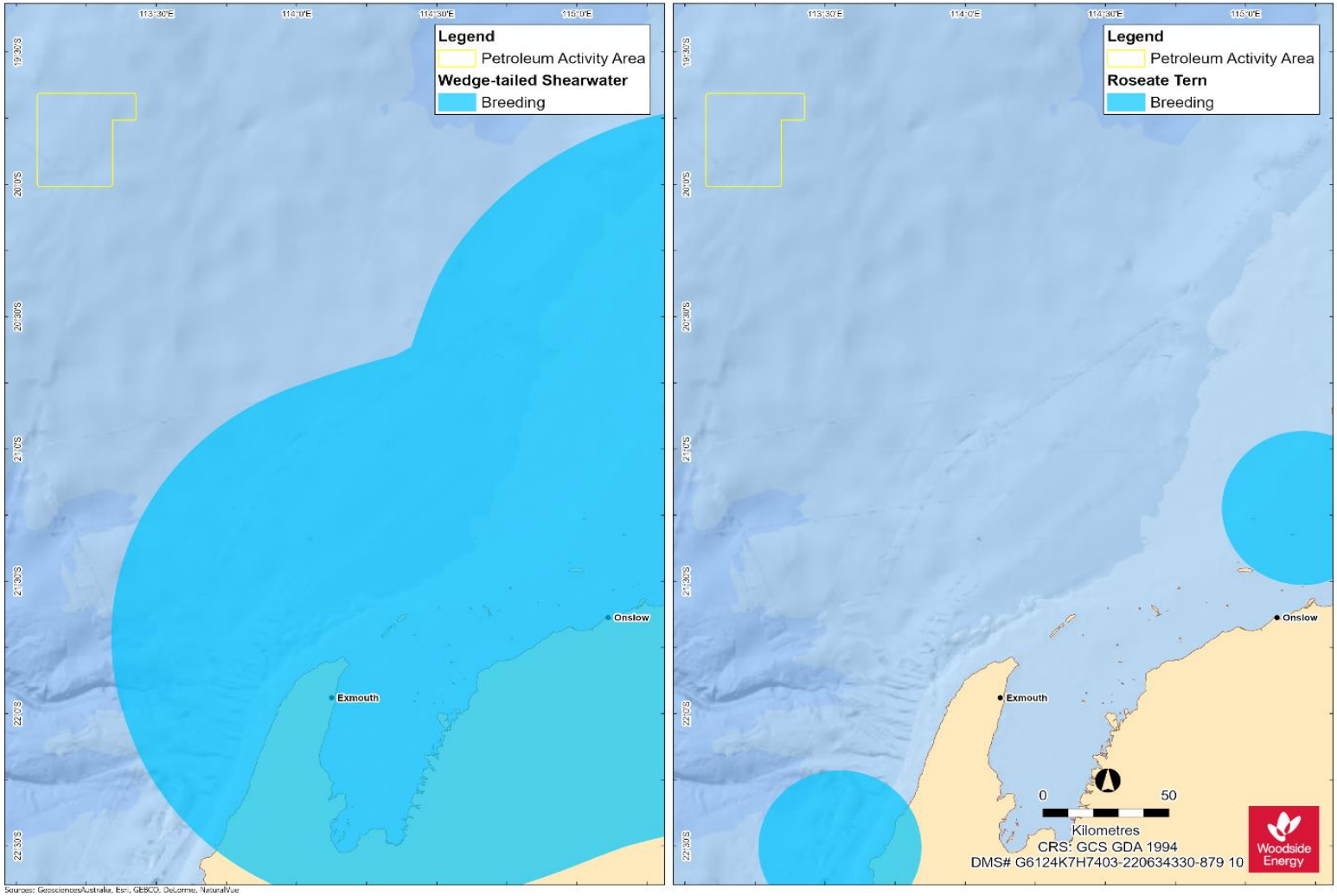


Figure 4-11: Seabird BIAs within the EMBA

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 4-14**.

As shown in **Figure 4-9**, the PAA is located 35 km from the pygmy blue whale migratory corridor and 187 km from the possible foraging area off North-west Cape / Ningaloo Coast.

In September 2021, DAFF (formerly DAWE) and NOPSEMA released guidance on key terms within the Conservation Management Plan for the Blue Whale CMP[5]. This guidance recognises the potential for whale foraging and feeding to occur in areas of high primary productivity outside of designated foraging areas. Migrating pygmy blue whales are not necessarily confined to the designated migratory corridor, and there is the potential for individuals to undertake opportunistic foraging within and adjacent to the PAA, particularly during the northbound migration.

[5] https://www.environment.gov.au/epbc/publications/guidance-key-terms-blue-whale-conservation-management-plan

Table 4-14: Key seasonal sensitivities for protected migratory species

Species	Life stage/Activity**	J	F	M	A	M	J	J	A	S	O	N	D
Marine turtles													
Green	Nesting	*	*									*	*
	Emergence	*	*	*									
Flatback	Nesting	*											*
	Emergence	*	*										
Hawksbill	Nesting										*	*	*
	Emergence	*											*
Loggerhead	Nesting	*											
	Emergence												
Marine mammals													
Pygmy blue whale	Northbound					*	*						
	Southbound											*	
Humpback whale	Northbound						*	*					
	Southbound									*			
Fish / Elasmobranchs													
Whale shark	Foraging – north of Ningaloo along 200m Isobath												
Manta rays	Presence/aggregation-breeding (Ningaloo)												
Seabirds													
Wedge-tailed shearwater	Foraging/breeding				* *								
Roseate tern	Breeding												
Migratory shorebirds													
General	Peak presence (non-breeding)												

** asterisk denotes peak periods*

***Note given the offshore location of the PAA, and distance from islands/mainland, specific life stages such as nesting do not occur in the PAA.*

4.7 Key Ecological Features (KEFs)

The PAA is situated on the Exmouth Plateau and lies entirely within the Exmouth Plateau Key Ecological Feature (KEF). The Exmouth Plateau KEF starts approximately 110 km offshore and extends to 370 km from the shore. The KEF occupies an area of 49,310 km^2 within water depths of 800–4000 m (Exon and Wilcox, 1980, cited in Falkner et al., 2009; Heap and Harris, 2008).

KEFs within the EMBA are identified in Table 4-15 and described in Appendix I. Figure 4-12 shows the spatial overlap with KEFs and the PAA

Table 4-15: KEFs within the PAA and/or EMBA

Key Ecological Feature	Distance (km) and direction from PAA to KEF	Overlaps with EMBA	Description
Exmouth Plateau	Overlaps PAA	✓	Water depth: 500–5000 m. Unique seafloor features with regional ecological significance. Believed to affect deep water flow and associated with internal tides, contributing to localised upwelling.
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	131 km south	✓	Interacts with Leeuwin Current to create localised upwellings and support aggregations of marine megafauna, migratory fish and seabirds.
Continental Slope Demersal Fish Communities	117 km south-east	✓	High biodiversity values, hosting more than 500 fish species, 76 of which are endemic.
Ancient coastline at 125 m depth contour	173 km south-east	✓	Water depths 115–135 m. Provides hard benthic substrate for regionally significant biodiversity hotspots and localised upwelling.
Wallaby Saddle	567 km south west	✓	Water depths 4000–4700 m. Unique habitat that does not occur at this size in the region. Historically significant sperm whale and baitfish aggregations and relatively enhanced biodiversity.
Western demersal slope and associated fish communities	622 km south	✓	Supports high biodiversity of demersal fish communities, with over 480 species described and 31 endemic to the region. Diversity attributed to overlap of ancient and extended Indo-west Pacific and temperate Australasian fauna.

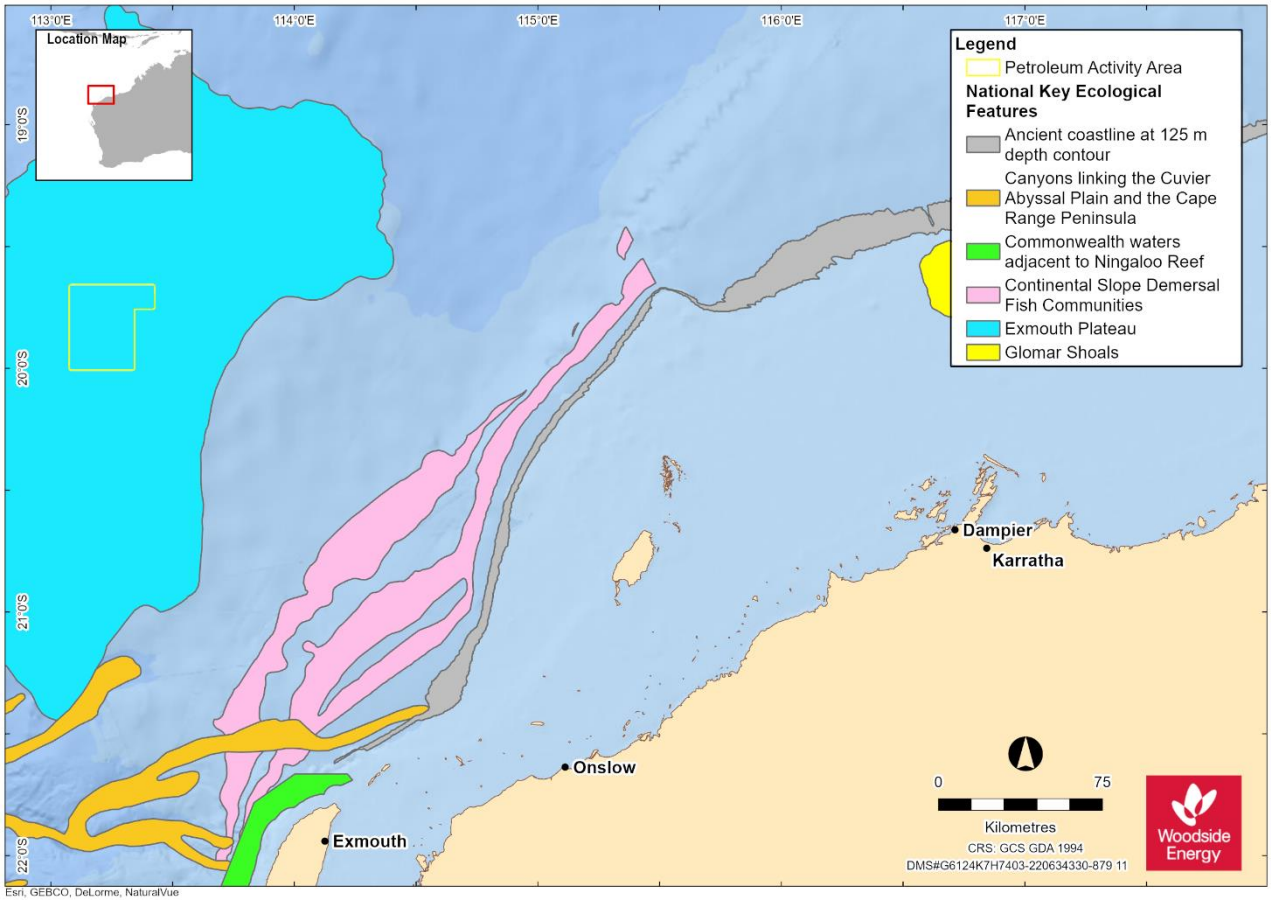


Figure 4-12: KEFs overlapping PAA

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 4-13**. **Appendix I** outlines the values and sensitivities of protected places and other sensitive areas in the EMBA.

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

	Distance (km) and direction from PAA to protected place or sensitive area	IUCN category* or relevant park zone overlapping the PAA and/or EMBA
Australian Marine Parks (AMPs)		
Gascoyne AMP	77 km south	IUCN VI
	205 km south-west	IUCN II
	207 km south-west	IUCN IV
Abrolhos AMP	564 km south-west	Habitat Protection Zone (IUCN IV)
Carnarvon Canyon AMP	423 km south-west	Habitat Protection Zone (IUCN IV)
State Marine Parks and Nature Reserves		
Marine Parks		
None		
Marine Management Areas		
None		
Nature Reserves		
None		
Other protected areas		
Fish Habitat Protection Areas		
None		

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: National Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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

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

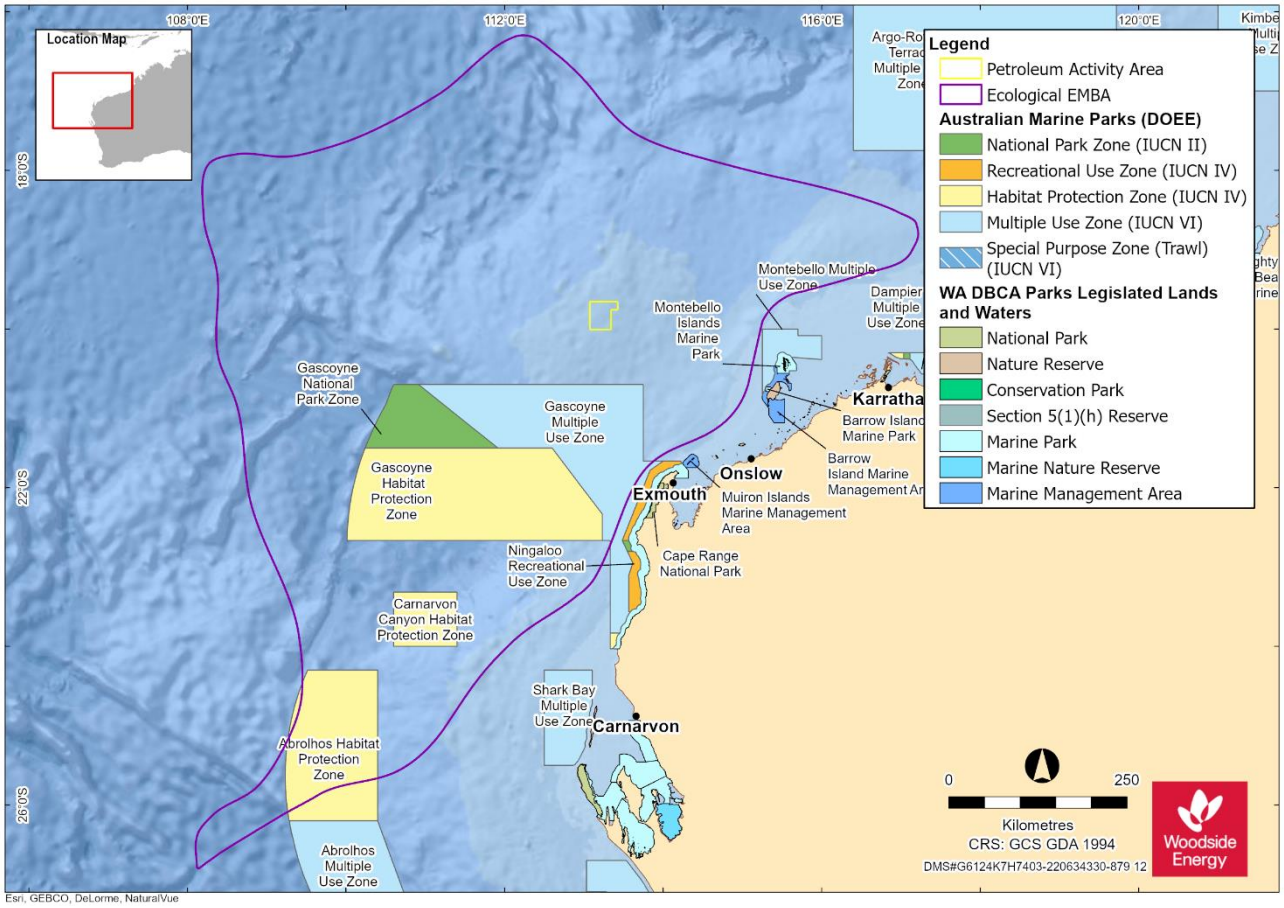


Figure 4-13: Protected areas overlapping the EMBA

4.9 Socio-economic Environment

4.9.1 Cultural Heritage

4.9.1.1 Background

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

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

In this section, the heritage value of places within the EMBA and the cultural features of the EMBA are described.

4.9.1.2 Native Title Rights and Interests

As a starting point for understanding social and cultural features of the environment for Indigenous groups, Woodside identifies native title claims, determinations and Indigenous Land Use Agreements (ILUAs) which the EMBA overlaps. 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, while acknowledging that cultural features and heritage values may exist outside of the native title framework.

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 Indigenous groups are claiming these rights and interests, and that native title determinations provide clarity on where native title rights and interests are found to either exist or not exist. Where native title rights or interests are determined to exist they will be held by a Registered Native Title Body Corporate (section 57, Native Title Act 1993) in trust or as agent for native title holders.

ILUAs are voluntary agreements between native title parties and other people or bodies about the use and management of land and/or waters and are registered by the Native Title Registrar in the Register of ILUAs. An ILUA can be made over areas where:

- native title has been determined to exist in at least part of the area; or
- a native title claim has been made; or
- where no native title claim has been made.

While registered, ILUAs operate as a contract between the parties, including relevant native title holders (Native Title Tribunal).

For the activity in this EP, there are no native title claims or determinations and no ILUAs overlapping the PAA and EMBA (see **Figure 4-14**). Therefore Woodside understands that no native title rights or interests may be impacted by the activity. A summary of native title claims, determinations and ILUAs which are 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 rights and interests may exist within either of these.

Woodside understands that Indigenous groups are keenly aware of the extent of their rights, interests and responsibilities for Country, and these are generally discrete, defined areas, including areas of sea (Smyth 2007). However, Woodside considers native title claims, determinations and Indigenous Land Use Agreements coastally adjacent to the EMBA in determining relevant persons (See **Table 5-2**) and consultation with these groups may identify heritage values and cultural features beyond those addressed in a native title context.

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 Indigenous groups and individuals. This may also, over time, build expectations in the broader Indigenous community that a group is responsible for maintaining environmental values in areas for which they do not hold traditional knowledge.

Woodside also acknowledges that an Indigenous group's relative proximity to any Operational Areas or EMBA is not necessarily a meaningful indicator of the connection of Indigenous groups to the area, and providing advice over such areas can be culturally dangerous. As a result, caution must be used when conducting broader engagement.

The Native Title Act also 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.

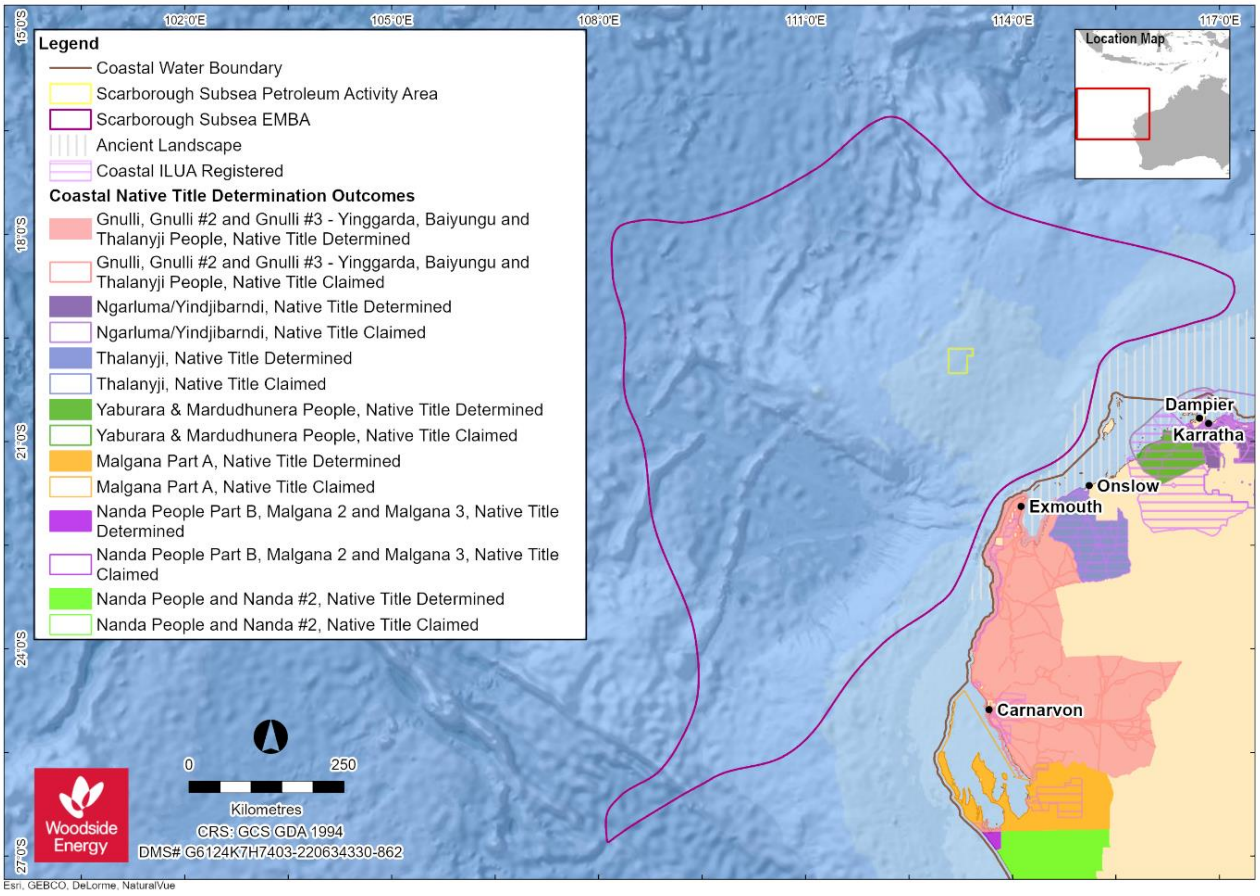


Figure 4-14: PAA and EMBA in relation to native title claims, determinations and ILUAs.

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

Claim / Determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally Adjacent to the EMBA
Claim / Determination			
Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation (YAC)	No	Yes
Malgana Part A	Malgana Aboriginal Corporation	No	Yes

Claim / Determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally Adjacent to the EMBA
Nanda People and Nanda #2	Nanda Aboriginal Corporation	No	Yes
Nanda People Part B, Malgana 2 and Malgana 3	Malgana Aboriginal Corporation and Nanda Aboriginal Corporation	No	Yes
Ngarluma People	Ngarluma Aboriginal Corporation (NAC)	No	Yes
Ngarluma/Yindjibarndi People	NAC, Yindjibarndi Aboriginal Corporation	No	Yes
Thalanyji	Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	No	Yes
Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation (WAC)	No	Yes
ILUA			
Anketell Port, Infrastructure Corridor and Industrial Estates Agreement	NAC	No	Yes
Brickhouse and Yinggarda Aboriginal Corporation ILUA	YAC	No	Yes
Cape Preston Project Deed (YM Mardie ILUA)	WAC	No	Yes
Cape Preston West Export Facility	WAC	No	Yes
Gnarloo ILUA	NTGAC	No	Yes
KM & YM ILUA	WAC, Robe River Kuruma Aboriginal Corporation	No	Yes
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement	No representative body specified.	No	Yes
Macedon ILUA	BTAC	No	Yes
Malgana Tamala Pastoral Lease Agreement	Malgana Aboriginal Corporation	No	Yes
Malgana Woodleigh Carbla Pastoral Lease Agreement	Malgana Aboriginal Corporation	No	Yes
Malgana Wooramel Pastoral Lease Agreement	Malgana Aboriginal Corporation	No	Yes
Ningaloo Conservation Estate ILUA	NTGAC	No	Yes
RTIO Ngarluma ILUA (Body Corporate Agreement)	NAC	No	Yes
RTIO Kuruma Marthudunera People ILUA	Robe River Kuruma Aboriginal Corporation	No	Yes
Quobba – Yinggarda Pastoral ILUA	YAC	No	Yes

4.9.1.3 Marine Parks and Ecosystems

Woodside acknowledges that Commonwealth and State Marine Park Management Plans have sought to recognise cultural values of Indigenous 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 marine parks, we take values into account'. AMP summarises these values as natural values, cultural values, heritage values and socio-economic values.

Woodside considers the management plans of marine parks that overlap the PAA and EMBA to determine whether cultural values have been identified or whether there are Traditional Custodians or representative bodies referenced to contact regarding potential cultural values.

The PAA does not overlap any Commonwealth Marine Parks. The EMBA overlaps with features of the Abrolhos AMP managed under the South-West Marine Parks Network Management Plan 2018 and Carnarvon Canyon AMP and Gascoyne AMP managed under the North-West Marine Parks Network Management Plan 2018. The PAA and the EMBA do not overlap any State Marine Parks. Where these plans specify identifiable representative bodies who may hold knowledge of heritage values or cultural features—including but not limited to Registered Native Title Bodies Corporate—these bodies are consulted (See **Table 5-2**). Consultation with these groups may identify heritage values and cultural features beyond those addressed in the marine park management plans. No identifiable representative bodies were specified for the marine parks overlapped by the EMBA (See **Table 4-18**).

The marine park management plans did note for the Abrolhos AMP and Gascoyne AMP that the Yamatji Marlpa Aboriginal Corporation (YMAC) is the relevant Native Title Representative Body. YMAC was requested to identify Traditional Custodians who may hold knowledge of heritage values or cultural features (See **Table 5-4**).

Table 4-18: Summary of Native Title Claims, Determinations and ILUAs which overlap or are coastally adjacent to the EMBA

Marine Park Management Plan	PAA Overlap	EMBA Overlap	Specified Bodies
Commonwealth Marine Park Management Plan			
Abrolhos AMP	No	Yes	No identifiable body specified.
Carnarvon Canyon AMP	No	Yes	No identifiable body specified.
Gascoyne AMP	No	Yes	No identifiable body specified.
State Marine Park Management Plan			
[None]			

In the management plans for all three AMPs it is noted that "Sea country is valued for Indigenous cultural identity, health and wellbeing." Cultural identity is understood to refer to the fact that "essence of being a 'Saltwater' person is ontological rather than merely technological. That is, it is about how people relate spiritually to the sea and engage with spiritual forces that created it, the marine flora and fauna and people." (McDonald and Phillips, 2021) This connection 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) but no impacts of this nature are considered to arise from this activity.

The North-West Marine Parks Network Management Plan 2018 also notes that cultural features of the Abrolhos AMP include strong stories that connect ocean and land. No impact pathway that may disrupt the preservation of stories or other intangible heritage from this activity has been identified. The plan also references artefacts located outside of the AMP and the EMBA on islands in state waters.

Woodside recognises the potential for marine ecosystems to include cultural features as well as environmental values. This is one aspect of the broader concept of “sea country”, which can be defined as the area of sea over which an Indigenous group has interests, cultural value, connection and use. It has been noted that “the saltwater peoples of the north-west are associated with discrete clan estates or tribal areas, often referred to in contemporary Aboriginal English as ‘saltwater country’ or ‘sea country’. ‘Country’ refers to more than just a geographical area: it is shorthand for all the values, places, resources, stories and cultural obligations associated with that geographical area.” (Smyth 2007). It necessarily follows that an impact to marine ecosystems has the potential to impact cultural values where the impact is detectable within Sea Country—the seascape which Traditional Custodians view, interact with or hold knowledge of. 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 (e.g., humpback whales, turtles and dugongs) that may travel many thousands of kilometres through areas with similar cultural values to multiple Indigenous language groups. For example, a humpback whale may travel 5,000 km from Antarctica to the Kimberley region of Western Australia (Double et al., 2010, 2012), passing Indigenous language groups along the entire west coast of Australia.

For the reasons set out above Woodside understands that impact to cultural values of marine species will be adequately managed in areas of traditional Sea Country, and therefore management of the environmental values will preserve the cultural values of environmental receptors, as assessed in **Section 6**.

During consultation, BTAC advised they have a cultural obligation to care for the environmental values of sea country (See **Table 5-4**). BTAC has not provided further detail regarding cultural values of the PAA or the EMBA. Malgana Aboriginal Corporation noted the ecological importance of Shark Bay, including stromatolites and seagrass beds (See **Table 5-4**), which Woodside understands may therefore include cultural values. Shark Bay is outside of the EMBA.

Woodside has committed to ongoing engagement to further understand these values. Should feedback be received (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).

No other cultural features or heritage values related to marine species within the PAA or EMBA were raised by Traditional Custodians during the course of preparing the EP.

4.9.1.4 Indigenous Archaeological Heritage Assessment

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

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

2021). Archaeological material preserved on the Ancient Landscape has the potential to provide further information about the earliest periods of human occupation (Veth et al 2019; UWA 2021).

Recent archaeological discoveries demonstrate that the now submerged landscape was occupied and inhabited, and can retain archaeological material from this time (Benjamin et al, 2020; see Ward et al 2021 for an opposing view).

In recognition of this, Woodside considers the Ancient Landscape between the mainland and the Ancient Coastline KEF (see **Figure 4-12**) as an area where potential Indigenous archaeological material may exist on the seabed, as this covers the full extent of this possible Indigenous occupation. The PAA does not overlap the Ancient Landscape. There is slight overlap of the EMBA with the Ancient Landscape but no potential for seabed disturbance from planned activities and therefore no potential for impacts to archaeological material.

Known Indigenous heritage places including archaeological sites may be protected under the Aboriginal and Torres Strait Islander Heritage Protection Act 1984, Underwater Cultural Heritage Act 2018 or EPBC Act 1999. However, these Acts only extend protection to heritage places specified by declaration or otherwise included on a statutory list. Woodside understands that there is no Indigenous archaeology known to exist anywhere within Commonwealth waters, and no declarations or prescriptions under these Acts are located within the EMBA.

For this EP, a search of DPLH's Aboriginal Heritage Inquiry System was undertaken, which showed no registered Aboriginal sites in the EMBA (see **Appendix G**).

No archaeological sites within the PAA or EMBA were identified by Traditional Custodians during the course of preparing the EP (see **Table 5-4**). Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).

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

4.9.1.5 Ethnographic Heritage Assessment

To supplement understanding of the area, Woodside engaged Murujuga Aboriginal Corporation (MAC) to conduct an ethnographic survey in 2020 for the Scarborough Project generally (McDonald and Phillips 2021), including the PAA (See **Figure 4-15**). An ethnographic survey determines both the tangible and intangible cultural heritage which may be associated with a particular story, person/peoples, animals, plants, area, features or objects. Typical results from surveys of this nature may include the identification of songlines, ceremonial places such as 'thalu' sites for managing environmental resources, or places where activities such as birthing, initiation or other significant activities are performed.

The 2020 survey was conducted by MAC as representatives of Traditional Custodians for the onshore and nearshore aspects of the Scarborough Project. MAC appointed their preferred heritage consultants to meet on Country with the MAC Circle of Elders to discuss the project and identify any cultural values (McDonald and Phillips 2021). The resulting report is owned by MAC and was approved by the Circle of Elders prior to being provided to Woodside. Representatives from the Mardudhunera, Ngarluma, Yaburara, Yindjibarndi and Wong-Goo-Tt-Oo Peoples—all five Indigenous groups represented by MAC (MAC 2022)—participated in this survey (McDonald and Phillips 2021). This scope of the assessment was informed by the Scarborough project's development footprint as provided in **Figure 4-15**, however a landscape-scale approach was undertaken, considering heritage values that may be identified by participants well beyond this

footprint. No boundary was imposed on the participants, and participants were not restricted in the types of heritage value they were encouraged to identify

The survey found no ethnographic sites or values within the EMBA. The survey identified ethnographic sites onshore, but these are outside the EMBA and scope of this EP (McDonald and Phillips 2021). It is not appropriate or practical to request Traditional Custodians to list all ethnographic values onshore which they have not identified as potentially impacted, however some identified in the report included stories related to Eaglehawk Island and several sites at Withnell Bay several kilometres from the project footprint, outside of the EMBA and exclusively onshore. Some of these sites have spiritual connections throughout the landscape including to Cape Preston and Depuch Island. It was not proposed in the report that the Project would pose any risk to these sites or values, which are located well outside the Project footprint.

Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).

Figure 4-15: Scarborough Development Extent considered in the 2020 ethnographic survey

4.9.1.6 Historic Sites of Significance

There are no known sites of historic heritage of significance within the PAA. **Appendix I** describes cultural heritage sites within the EMBA.

4.9.1.7 Historic Underwater Heritage

A search of the Australasian Underwater Cultural Heritage Database, which records all known Maritime Cultural Heritage (shipwrecks, aircraft, relics and other underwater cultural heritage) in Australian waters does not contain records of sites within the PAA but does include seven sites

within the EMBA. The closest Underwater Cultural Heritage site is the wreck of the Wild Wave, a Chinese sailing vessel which sank off the Montebello Islands, approximately 191 km east of the PAA.

4.9.1.8 World, National and Commonwealth Heritage Listed Places

No listed world, national or commonwealth heritage places overlap the PAA or EMBA.

4.9.1 Commercial Fisheries

A number of Commonwealth and State fishery management areas are located within the PAA and EMBA. FishCube and ABARES data were requested to analyse the potential for interaction of fisheries with the PAA, which was used to determine which fisheries may be impacted by proposed petroleum activities (REF ABARES, Department of Primary Industries and Regional Development [DPIRD], 2021)[6]. Table 4-19 provides an assessment of the potential interaction provides further detail on the fisheries that have been identified through desk-based assessment and consultation (Section 5). No fisheries were identified as having a potential interaction with the Petroleum Activities Program in the Operational Area.

Table 4-19: Commonwealth and State commercial fisheries overlapping the PAA and EMBA

Fishery	Potential for interaction		
	PAA	EMBA	Description
Commonwealth Managed Fisheries			
North West Slope Trawl Fishery	×	✓	The North West Slope Trawl Fishery management area overlaps the EMBA. Fishery Status Report 2022 indicates current fishing effort is concentrated from Barrow Island to Broome, and occurred within the EMBA in the 2021 - 2022 season (ABARES, 2021). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Western Deepwater Trawl Fishery	×	✓	The Western Deepwater Trawl Fishery management area overlaps the PAA and the EMBA. Fishery Status Report 2022 indicates current fishing effort is concentrated between Shark Bay and Cape Range, and occurred within the EMBA in the last five years (ABARES, 2021). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Western Tuna and Billfish Fishery	×	✓	The Western Tuna and Billfish Fishery management area spans the Australian Fishing Zone west of Victoria and the Torres Strait and overlaps the PAA and the EMBA. Fishery Status Report 2022 indicates current fishing effort is concentrated between Carnarvon and Albany, and occurred within the EMBA in the last five years (ABARES, 2021). Accordingly, 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 the 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. (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.

[6]Data from Fishcube and ABARES was reviewed from the last 5 years as a subset of past fishing effort. This was deemed an appropriate period as it represents potential future fishing effort over the lifecycle of the EP (no longer than 5 years).

Fishery	Potential for interaction		
	PAA	EMBA	Description
Western Skipjack Tuna Fishery	×	×	The Western Skipjack Tuna Fishery management area spans the Australian Fishing Zone west of Victoria and the Torres Strait and overlaps the PAA and the EMBA. The Fishery is not currently active and no fishing has occurred since 2009 (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Southern Tuna and Billfish Fishery	×	×	The Southern Tuna and Billfish Fishery management area spans the Australian Fishing Zone and overlaps the PAA and the EMBA. Fishery Status Report 2022 indicates current fishing effort is concentrated in south-eastern Australia (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
State Managed Fisheries			
Pilbara Line Fishery	×	✓	The Pilbara Line Fishery licensees are permitted to operate anywhere within Pilbara waters (Newman et al., 2021), overlapping the PAA and EMBA. The fishery is active in the EMBA, with six 60 NM Catch and Effort System (CAES) blocks reporting up to five licences across the 2017 – 2022 seasons (DPIRD, 2022). FishCube data is not available at the 10 NM scale however data at the 60 NM scale suggest fishing effort is concentrated to the east of the EMBA (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur within the EMBA.
Pilbara Fish Trawl (Interim) Managed Fishery	×	✓	The Pilbara Fish Trawl (Interim) Managed Fishery management area overlaps the EMBA. The fishery has remained consistently active in the EMBA over the last 5 years, with two 60 NM CAES blocks reporting up to four vessels across each season between 2017 – 2022 (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM overlapping the PAA (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur within the EMBA.
Pilbara Trap Managed Fishery	×	✓	The Pilbara Trap Managed Fishery management area overlaps the EMBA. The fishery is active across the EMBA with seven 60 NM CAES blocks reporting up to three vessels active between the 2017 – 2022 seasons (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Marine Aquarium Fish Managed Fishery	×	✓	The Marine Aquarium Fish Managed Fishery management area overlaps the PAA and EMBA. The fishery is active across the EMBA with three 60 NM CAES blocks reporting up to five licences active between the 2017 – 2022 seasons (DPIRD, 2022). The FishCube data reported no active fisheries at 10 NM overlapping the PAA (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur within the EMBA.
West Coast Deep Sea Crustacean Managed Fishery	×	✓	The West Coast Deep Sea Crustacean Managed Fishery is permitted to fish in waters deeper than the 150 m isobath overlapping the EMBA. The fishery has remained consistently active in the EMBA between the 2017 – 2022 seasons with eight 60NM CAES blocks overlapping the EMBA reported less than 3 vessels with active fishing effort (DPIRD, 2022). The FishCube data reported no active fisheries at 10 NM overlapping the PAA (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Mackerel Managed Fishery (Area 2 and Area 3)	×	✓	The Mackerel Managed Fishery management area overlaps the PAA and the EMBA. The fishery is active across the EMBA with seven 60 NM CAES blocks reporting up to six vessels active between the 2017 – 2022 seasons (DPIRD, 2022). The FishCube data reported no active fisheries at 10 NM overlapping the PAA (DPIRD, 2022). Accordingly, Woodside

Fishery	Potential for interaction		
	PAA	EMBA	Description
			considers it a possibility that interactions with the fishery may occur in the EMBA.
Western Australian Sea Cucumber Fishery	×	✓	The Western Australian Sea Cucumber Fishery is permitted to fish throughout WA waters. FishCube data reported one CAES blocks overlapping the EMBA (DPIRD, 2022). Fishing effort was reported by less than three vessels across the 2017 – 2019 seasons (DPIRD, 2022). The FishCube data reported no active fisheries at 10 NM overlapping the PAA (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Gascoyne Demersal Scalefish Fishery	×	✓	The Gascoyne Demersal Scalefish Fishery management area overlaps the EMBA (DPIRD 2022). FishCube data reports fishing effort occurs within the EMBA across three CAES blocks reporting up to eleven licenses across 2017 – 2022 seasons (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM CAES blocks overlapping the PAA (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the EMBA.
Specimen Shell Managed Fishery	×	✓	The Specimen Shell Managed Fishery management area overlaps the EMBA. The fishery is active across the EMBA with four 60 NM CAES blocks reporting up to six licences active between the 2017 – 2022 seasons (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM overlapping the PAA (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the EMBA.
Onslow Prawn Managed Fishery	×	✓	The Onslow Prawn Managed Fishery management area overlaps the the EMBA. FishCube data reports fishing effort occurs within the EMBA across three CAES blocks reporting less than three licenses across 2018 – 2022 seasons (DPIRD, 2022). The FishCube data reported no active fisheries at 10 NM overlapping the PAA (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Nickol Bay Prawn Managed Fishery	×	✓	The Nickol Bay Prawn Managed Fishery management area overlaps the EMBA. The fishery is active across the EMBA with one 60 NM CAES blocks reporting less than three vessels active between the 2020 – 2021 season (DPIRD, 2022). The FishCube data reported no active fisheries at 10 NM overlapping the PAA (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Abalone Managed Fishery	×	×	The Abalone Managed Fishery management area overlaps the EMBA. FishCube reported no fishing effort within the EMBA and Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Pilbara Crab Managed Fishery	×	×	The Pilbara Crab Managed Fishery management area overlaps the PAA and the EMBA. FishCube reported no fishing effort within the EMBA and Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
West Coast Demersal Gillnet Managed Fishery	×	×	The West Coast Demersal Gillnet Managed Fishery management area overlaps the EMBA. FishCube reported no fishing effort within the EMBA and Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
West Coast Rock Lobster Fishery	×	×	The Western Rock Lobster Fishery management area overlaps the EMBA (DPIRD 2022). FishCube reported no fishing effort within the EMBA and Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.

Fishery	Potential for interaction		
	PAA	EMBA	Description
South West Coast Salmon Managed Fishery	×	×	The South West Coast Salmon Fishery management area overlaps the PAA and EMBA. FishCube data reported no fishing effort occurs north of the Perth metropolitan area (DPIRD, 2022). Accordingly, no fishing effort occurs within the EMBA and Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Charter based commercial operators			
Tour Operators	×	✓	Fishing Tour Operators are permitted to operate across WA state waters and are required to report monthly logbook records of client fish catches. FishCube data reports consistent fishing effort across ten 60 NM CAES blocks that overlap the EMBA (DPIRD 2022). Fishing effort was reported by up to twenty vessels across the 2017 – 2022 seasons (DPIRD, 2022). The FishCube data reported no active tour operators at 60 NM overlapping the PAA (DPIRD, 2022) and indicates tour operator fishing effort highest around Ningaloo and Murion Islands and at Barrow Island and the Montebello Islands. Accordingly, Woodside considers it a possibility that interactions with tour operators will occur within the EMBA.

4.9.2 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 structures such as reefs. However, it is recognised that Barrow Island, Montebello Islands, Exmouth, Ningaloo Reef and the adjacent foreshores have a known history of fishing when areas were occupied (as from historical records).

Areas that are covered by registered native title claims are likely to practice Aboriginal fishing techniques at various sections of the WA coastline.

4.9.3 Tourism and Recreation

Current FishCube data (2011–2020) indicates that no tour operators use the waters within or surrounding the PAA (DPIRD, 2021). The PAA is considered too far offshore for recreational fishing or tourism activities to occur. Additionally, the wider EMBA does not overlap with any recognised tourism or recreational areas, however, it is adjacent to the Montebello Islands (~230 km east-south-east of the PAA), and Ningaloo Marine Park (~198 km south-east of the PAA), where fishing, surfing, snorkelling and diving activities occur year round. Current FishCube data (2011–2020) indicates tour operators may be active in offshore waters adjacent to the regionally significant Ningaloo National Park and Montebello Islands, overlapping the edge of the EMBA (DPIRD, 2021).

It is acknowledged that there are growing tourism and recreational sectors in WA. These sectors have expanded in area over the last couple of decades. Potential for growth and further expansion in tourism and recreational activities in the Pilbara and Gascoyne regions is recognised, particularly with the development of regional centres and a workforce associated with the resources sector (Gascoyne Development Commission, 2012).

4.9.4 Commercial Shipping

The Australian Maritime Safety Authority (AMSA) has introduced a network of marine fairways across the NWMR off WA to reduce the risk of vessel collisions with offshore infrastructure. It is noted that none of these fairways intersect with the PAA; the nearest fairway is approximately 38 km east of the PAA (**Figure 4-16**). Vessel tracking data suggest the majority of shipping is concentrated to the east of the PAA, which is likely associated with ports.

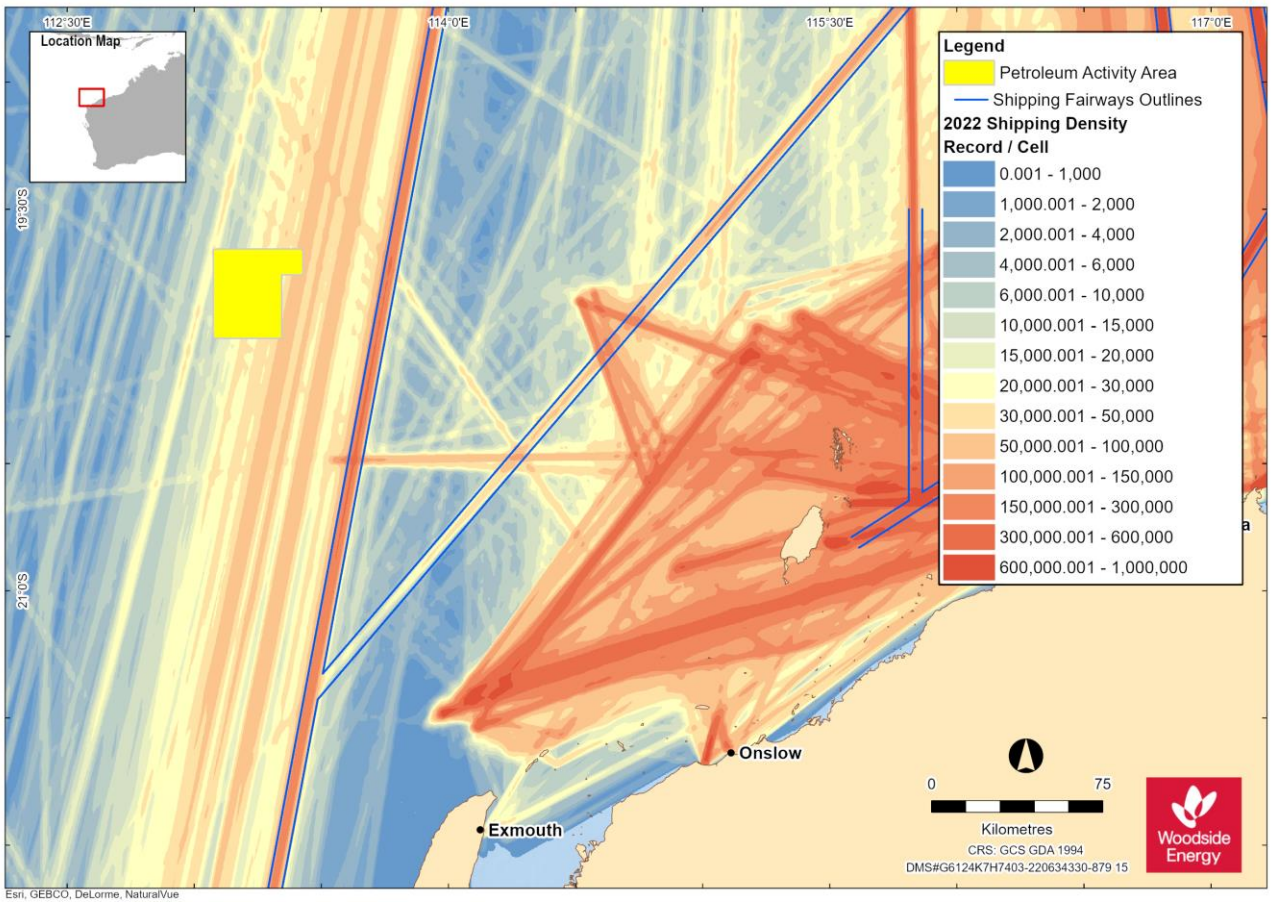


Figure 4-16: Vessel density map for the PAA, derived from AMSA satellite tracking system data

Note: Vessels include cargo, LNG tanker, passenger vessels, support vessels, and others/unnamed vessels

4.9.5 Oil and Gas

The PAA is located in the Exmouth Plateau area of the Northern Carnarvon Basin. One appraisal well is present within the PAA; North Scarborough 1. Eight proposed development wells (plus 2 contingent wells) covered under the Scarborough Drilling & Completions EP may also be completed when this Petroleum Activities Program is executed. There are no oil and gas platforms owned or operated by other petroleum titleholders located within 50 km of the PAA (**Figure -4-17**) describes current oil and gas development within the EMBA.

Table 4-20: Petroleum wells located within the PAA

Well	Operator	Title	Easting (m)	Northing (m)	Distance from PAA
North Scarborough 1 ST1	BHP Billiton Petroleum (North West Shelf) Pty. Ltd.	WA-346-P	736110	7815120	Overlap
Scarborough 1	Esso Australia Ltd	WA-69-P	724797	7799935	Overlap
Scarborough 2	Esso Australia Ltd	WA-1-R	728860	7797701	Overlap
Scarborough 3	BHP Billiton Petroleum Pty Ltd	WA-1-R	733168	7796433	Overlap
Scarborough 4	BHP Billiton Petroleum Pty Ltd	WA-1-R	732198	7805189	Overlap

Well	Operator	Title	Easting (m)	Northing (m)	Distance from PAA
Scarborough 5	BHP Billiton Petroleum Pty Ltd	WA-1-R	719935	7797452	Overlap
(Proposed) Well 1	Woodside Energy Scarborough Pty Ltd	WA-61-L	96296	7795872	Overlap
(Proposed) Well 2			93124	7795254	
(Proposed) Well 3			98559	7796277	
(Proposed) Well 4			92664	7797617	
(Proposed) Well 5			104450	7797598	
(Proposed) Well 6			103840	7803545	
(Proposed) Well 7			105975	7810167	
(Proposed) Well 8			96303	7795949	
(Proposed) Contingent wells			Unconfirmed	Unconfirmed	

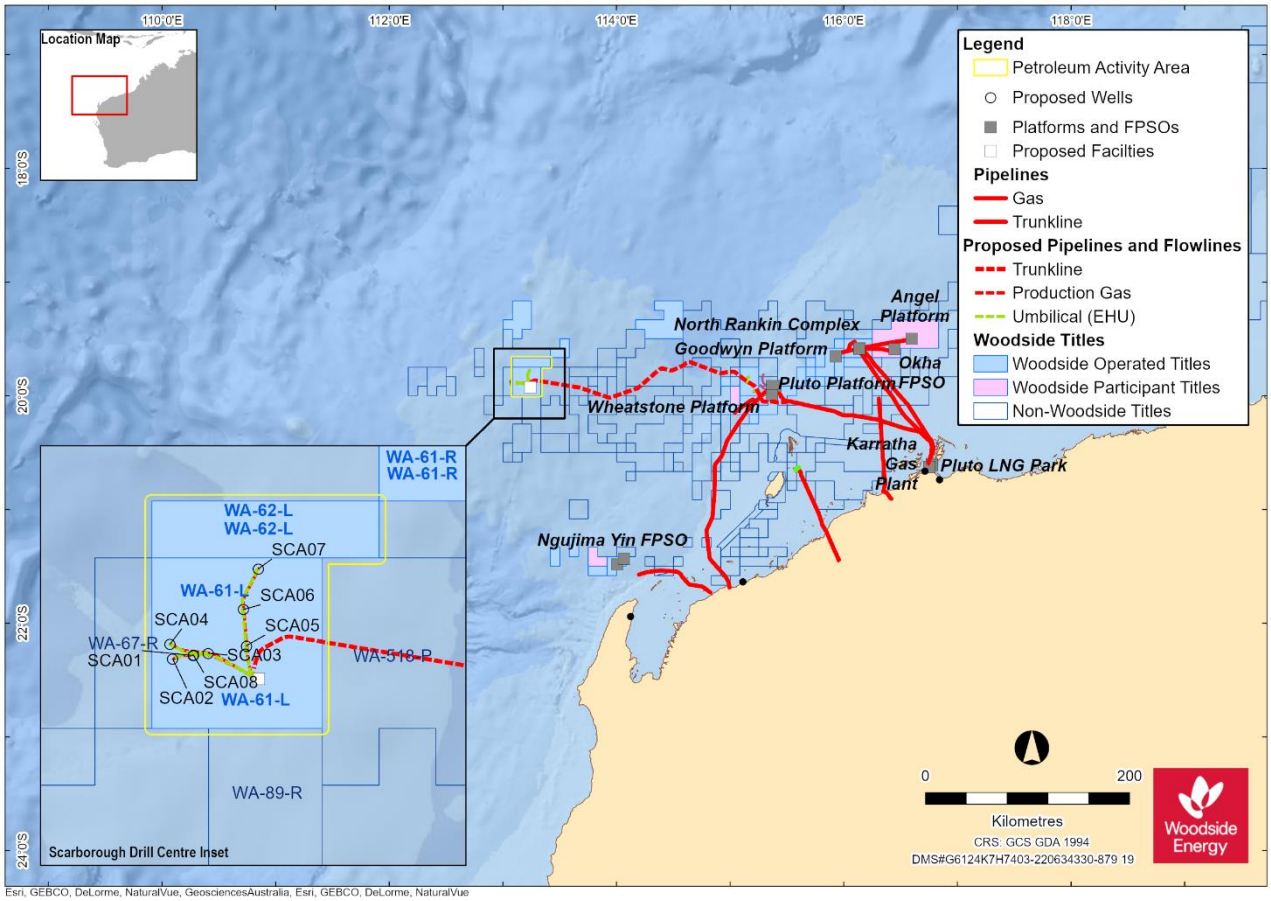


Figure 4-17: Oil and gas titles and infrastructure within the region

4.9.6 Defence

There are designated Department of Defence practice areas in the offshore marine waters off Ningaloo Reef and the North West Cape in the EMBA. The PAA lies within the northern tip of one of these defence training areas, the North West Exercise Area (NWXA) accessed by Royal Australian Air Force (RAAF) Base Learmonth (**Figure 4-18**). The Learmonth Air Weapons Range (AWR)

practice area is located approximately 70 km south of the PAA. The closest site where unexploded ordnance is known to occur is 20 km north-west of Bessieres Island, located approximately 211 km from the PAA, and outside of the EMBA. Defence areas overlapping the PAA are presented in **Figure 4-18**.

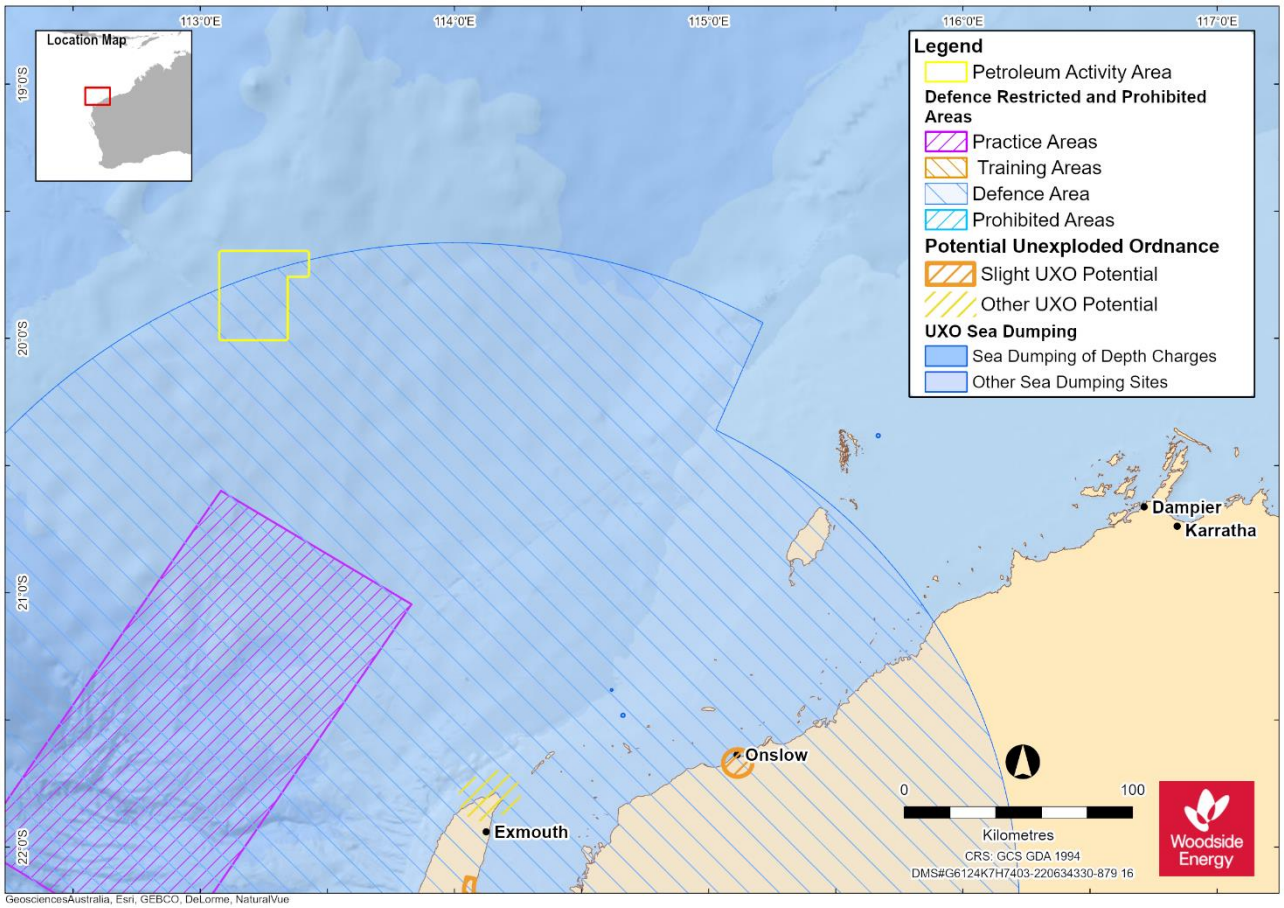


Figure 4-18: Defence Restricted and Prohibited areas relative to the PAA

5 CONSULTATION

5.1 Summary

Woodside consults relevant persons in the course of preparing an EP in accordance with regulation 11A of the Environment Regulations. Woodside acknowledges that consultation is designed to ensure that relevant persons are identified and given sufficient information and a reasonable period to allow them to make an informed assessment of the possible consequences of the proposed activity on them and, to ensure that Titleholders can consider and adopt appropriate measures in response to the matters raised by relevant persons. Consistent with regulation 3 of the Environment Regulations, consultation also supports Woodside's objective to ensure that the environmental impacts and risks of the activity are reduced to ALARP and an acceptable level.

Woodside acknowledges that a titleholder's approach to consultation must be informed by both the Environment Regulations and the findings of the Full Federal Court in *the Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (see **Section 5.2**) delivered on 2 December 2022.

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

Woodside's consultation methodology is divided into three parts:

- The first section (**Section 5.2** to **5.6**) provides an overview of Woodside's consultation methodology for its EPs, including how we apply regulation 11A(1) of the Environment Regulations to identify relevant persons.
- The second section (**Section 5.7**) explains Woodside's application of the consultation methodology and Woodside's assessment of relevant persons for this EP.
- The third section (**Section 5.8**) details the consultation information provided to relevant persons, feedback received and Woodside's assessment of the merits of objections or claims. This section also describes engagement with persons or organisations that Woodside chose to contact who are not relevant persons for the purposes of regulation 11A(1) of the Environment Regulations (see **Section 5.3.4**).

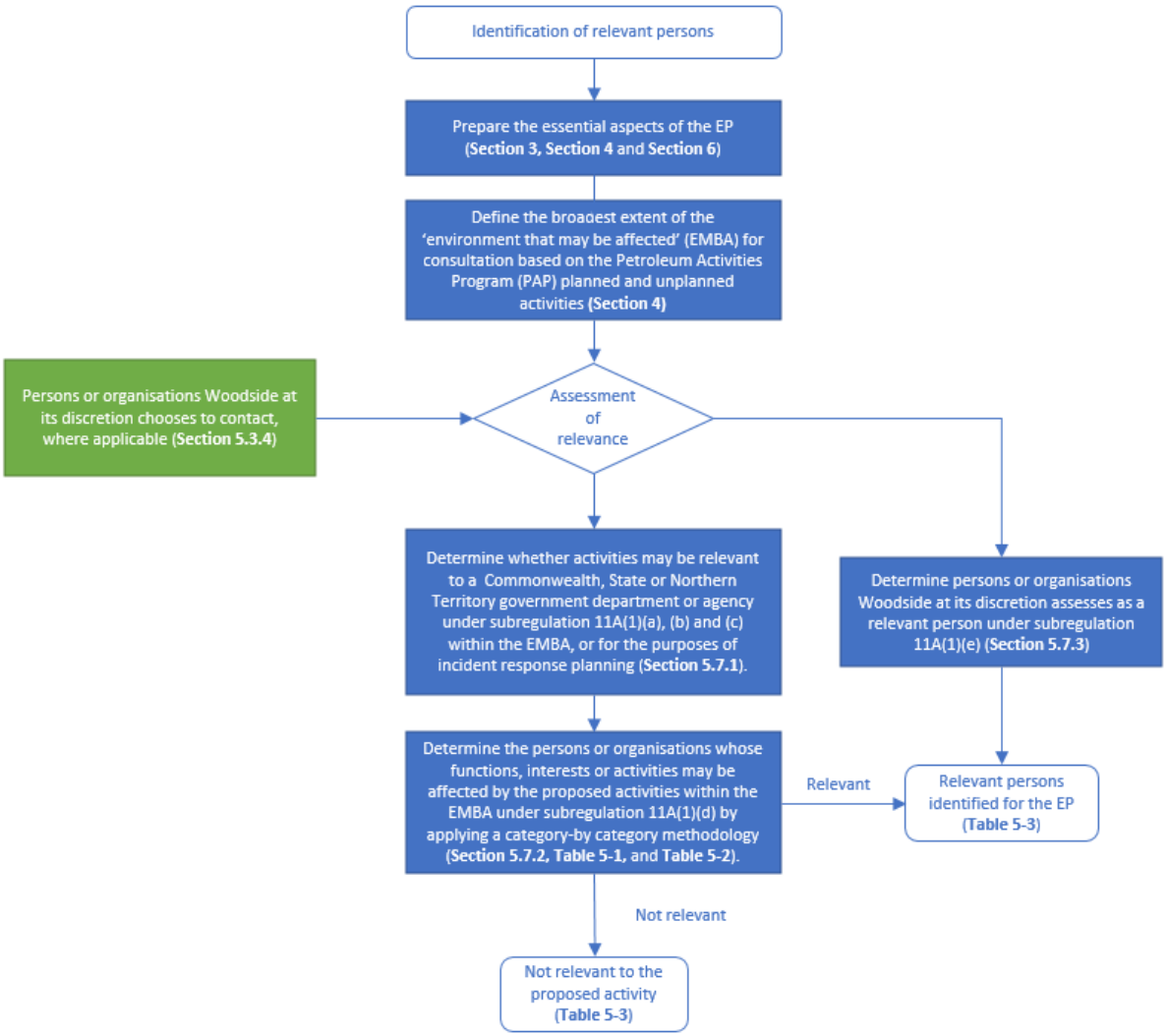


Figure 5-1: Overview of Woodside's methodology to identify relevant persons

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 understand the potential risks and impacts from our proposed activities and to develop appropriate measures to manage them.

The length of time that we have operated in Commonwealth and State waters, and the history of continued engagement with a wide range of persons and organisations enables Woodside to develop an extensive consultation list to inform its consultation process. This consultation list is not used as a definitive list of persons to consult, but rather, assists Woodside as an input to its understanding of relevant persons with whom to consult on a proposed petroleum activity. The information in the consultation list has been captured from years of experience, it contains insights relating to the type of information particular persons or organisations want to receive during consultation, the appropriate method of consultation for relevant persons and includes appropriate contact details, which are periodically reviewed and updated.

Woodside acknowledges NOPSEMA's *Guideline on Consultation in the course of preparing an environment plan* (12 May 2023) as well as recent judicial guidance (in the Full Federal Court's

decision in *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193) 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.*

In order to undertake consultation, Woodside has developed a methodology for identifying relevant persons, in accordance with regulation 11(A)1. This methodology reflects NOPSEMA's recent guideline and demonstrates that, in order to meet the requirements of regulation 10A (criteria for EP acceptance) when preparing the EP, Woodside understands:

- our planned activities in the PAA being the area in which our planned activities are proposed to occur (see **Section 3.3.2**); and
- the geographical extent to which the environment may be affected (EMBA) by risks and impacts from our activities (unplanned) (identified in **Section 4.1** and assessed in **Section 6.8**).

Woodside has undertaken consultation in the course of preparing this EP in compliance with regulation 11A of the Environment Regulations, which requires a titleholder to:

- consult with each of the following (a relevant person) in the course of preparing an environment plan:
    - each Department or agency of the Commonwealth to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant;
    - each Department or agency of a State or the Northern Territory to which the activities to be carried out under the EP, or the revision of the EP, may be relevant;
    - the Department of the responsible State Minister, or 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, or the revision of the EP; and
    - any other person or organisation that the titleholder considers relevant (regulation 11A(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 the their functions, interests or activities (regulation 11A(1)(2));
- allow a relevant person a reasonable period for the consultation (regulation 11A(1)(3)); and
- tell each relevant person that the titleholder consults with that the relevant person may request that particular information it provides in the consultation not be published and any information subject to such a request is not to be published (regulation 11A(1)(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;
- seeks to ensure that the environmental impacts and risks of the activity will be of an acceptable level;
- 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 that the petroleum activity may otherwise cause;
- is collaborative; Woodside respects that for a relevant person, consultation is voluntary. Where the relevant person seeks to engage, Woodside collaborates with the relevant person with the aim of seeking genuine and meaningful two-way dialogue; and
- provides opportunities for relevant persons to provide feedback throughout the life of the EP through its ongoing consultation process (refer to **Section 5.6** and **Section 7.8.2.1**).

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

- 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

NOPSEMA:

- GL2086 – Consultation in the course of preparing an environment plan – May 2023
- GN1847 - Responding to public comment on environment plans - July 2022
- GN1344 - Environment plan content requirements - September 2020
- GL1721 - Environment Plan Decision Making Guideline - December 2022
- GN1488 - Oil pollution risk management - July 2021
- GN1785 – Petroleum activities and Australian Marine Parks – June 2020
- GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023
- PL2098 – Draft Policy for managing gender-restricted information
- Consultation on offshore petroleum environment plans – Information for the community

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

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

Australian Fisheries Management Authority:

- Petroleum industry consultation with the commercial fishing industry

Commonwealth Department of Agriculture and Water Resources:

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

WA Department of Primary Industries and Regional Development:

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

WA Department of Transport:

- Offshore Petroleum Industry Guidance Note

Good practice consultation:

- IAP2 Public Participation Spectrum
- Engage early – guidance for proponents on best practice Indigenous engagement for environmental assessments under the EPBC Act

5.3 Identification of Relevant Persons for Consultation

5.3.1 Regulations 11A(1)(a), (b) and (c)

The relevant inquiry for determining relevant persons within the description of regulations 11A(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. In accordance with regulation 11A(1)(c), Woodside consults with the department of the relevant State Minister, which for this EP is the Department of Mines, Industry Regulation and Safety (DMIRS).

5.3.2 Regulation 11A(1)(d)

In order to identify a relevant person for the purposes of regulation 11A(1)(d), the meaning of "functions, interests or activities" needs to be understood. In regulation 11A(1)(d), the phrase "functions, interests or activities" should be construed broadly and consistently with the regulatory objects of the Environment Regulations (Regulation 3) and the objects of the EPBC Act (Section 3A).

In developing its methodology for consultation, Woodside acknowledges that the current guidance on the definition of functions, interests and activities is as follows:

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 4 of the Environment Regulations and is likely be directed to what the relevant person is already doing.

As discussed in **Section 5.1** and **Section 5.2**, Woodside's methodology assesses relevance of a person or organisations functions, interests or activities based on:

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

5.3.3 Regulation 11A(1)(e)

In addition to assessing relevance under regulation11 A(1)(d), Woodside has discretion to categorise any other person or organisation as a relevant person under regulation11A(1)(e).

5.3.4 Persons or organisations Woodside chooses to contact

In addition to undertaking consultation with relevant persons under regulation11A(1) there are persons or organisations that Woodside chooses to contact, from time to time, in relation to a proposed activity. For example, these are persons or organisations:

- that are 'not relevant' pursuant to regulation 11A(1) but that Woodside has chosen to seek additional guidance from, for example, to inform the correct contact person for Woodside to consult, or engage due to guidance from, for example, a relevant person or the Regulator;

- that are 'not relevant' pursuant to regulation 11A(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. Therefore, engagement is required to inform relevance under Woodside's methodology. Woodside follows the same methodology for assessing a person or organisations relevance as it does during its initial assessment (as described in **Figure 5-1** and **Section 5.7**). The result of Woodside's assessment of relevance during the development of the EP is outlined at **Table 5-3**.

5.4 Consultation Material and Timing

Regulation 11A(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 11A(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 (for the relevant person) and collaborates on a consultation approach where further engagement is sought by the relevant person. Woodside understands that the consultation process should be appropriate for the category of relevant persons and that 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 PAP. Woodside recognises published guidance for good practice consultation relevant to different sectors and disciplines (see **Section 5.2**). 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 (**Appendix F, reference1.1 and 1.107**). 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 PAA where the activity will take place, the timing and duration of the activity, a location map of the PAA and EMBA, a description of the EMBA, relevant exclusion zones as well as a summary of relevant risks and mitigation and/or management control measures relevant to the proposed petroleum activity. It also sets out contact details to provide feedback to Woodside.

Woodside recognises that 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, also 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, for example as a result of temporary displacement due to exclusion zones, may require more targeted information relevant to their functions, interests or activities. Woodside also acknowledges NOPSEMA's brochure entitled *Consultation on offshore petroleum environment plans information for the community*, which advises consultees that they may inform titleholders that they only want to be consulted in the very unlikely event of an oil spill.

As described in **Section 5.3.4**, Woodside places advertisements in a selected local, state and national newspaper. This typically includes the name of the EP Woodside is seeking feedback on, an overview of the activity, the consultation feedback date and the ways in which a person or organisation can provide feedback. Advertising in the local paper in the area of the activity is also consistent with the public notification process under section 66 of the *Native Title Act* for native title applications. Woodside typically aligns advertisement feedback timeframes with the timing described

below. Feedback received is assessed in accordance with **Section 5.7** to determine relevance and evidenced in **Table 5-3** as appropriate.

As Woodside has been operating for more than 30 years and many persons or organisations have been consulted on other EPs or Woodside business, Woodside has a high level of understanding of how those persons or organisations wish to be engaged. Woodside utilises a range of tools to provide sufficient materials to relevant persons, which may include one or more of the following:

- Consultation Information Sheet available on Woodside's website (**Appendix F, reference1.1** and **1.107**);
- Bespoke Consultation Information Sheet, presentations or summaries specific to a particular relevant person group (**Appendix F, reference 1.108** and **1.109**);
- Subscription available on Woodside's website to receive notification of new Consultation Information Sheets for Woodside EPs;
- Emails;
- Letters;
- Phone calls;
- Face-to-face meetings (virtual or in person) with presentation slides or handouts as appropriate;
- Maps outlining a persons or organisations defined area of responsibility in relation to the proposed activity, for example a fisheries management area or defence training area; and
- Community meetings, as appropriate.

Woodside recognises that information may need to be provided to relevant persons in an iterative manner during the consultation process. Woodside considers that in line with the intent of consultation (see **Section 5.2**), the threshold for genuine two-way engagement is met via feedback on incorporation of controls, where applicable, being provided to the relevant person to ensure the relevant persons understands how their input has been considered in the development of the EP.

Information which is provided to relevant persons for the purposes of consultation on this EP is summarised at **Table 5-4.**

Table 5-5 sets out the information which is provided to persons or organisations that are not relevant for the purposes of regulation 11A but which Woodside has chosen to contact (see **Section 5.3.4**).

When engaging in consultation, Woodside notifies relevant persons that, in accordance with regulation 11A(4), the relevant person may request 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.

5.4.2 Sufficient time

Woodside seeks feedback 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's typical approach is as follows:

- advertising in a selected local, state and national newspapers (**Appendix F, reference 1.110**) 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 (see **Section 5.3.4**), and providing a target date for feedback. Woodside acknowledges that feedback may be received from relevant persons following the target date;

- acknowledging that the way in which Woodside provides consultation information may vary depending on the relevant person or organisation and, may depend on the degree to which a relevant person or organisation is affected. Different consultation processes may be required for relevant persons and organisations depending on the information requirements;
- following up with relevant persons prior to EP submission. Where possible, Woodside will endeavour to use an alternative method of communication to contact the relevant person; and
- engaging in two-way dialogue with relevant persons or organisations where feedback is received.

The specific consultation materials and engagements for this EP are set out in **Section 5.8.1, Table 5-4** and **Table 5-5**.

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

Typical accepted 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 Government departments / agencies – environment Government departments / agencies – industry	Woodside applies NOPSEMA's guideline for engagement with Commonwealth government departments or agencies in line with *GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023* by using email for its consultation unless another form of communication is requested. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Commercial fisheries and peak representative bodies Recreational marine users and peak representative bodies	Commonwealth commercial fisheries: The Australian Fisheries Management Agency (AFMA) has responsibility for providing licence holder contact details which are limited to email addresses. 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. State commercial fisheries and recreational marine users: The Western Australian Department of Primary Industries and Regional Development (DPIRD) has responsibility for managing the *Fish Resources Management Act 1994* and *Aquatic Resources Management Act 2016*, which limits the provision of contact details from the register to the name and business address of licence holders. Alternative forms of communication are at the licence holder's discretion. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request. Peak representative bodies: Email is used as the primary form of communication with commercial fishery and recreational marine user peak representative bodies in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Titleholders and Operators	Email is used as the primary form of communication between titleholders and operators in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Peak industry representative bodies	Email is used as the primary form of communication with peak representative bodies in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used on request.
Traditional Custodians	There are many forms of communication that Woodside uses on a case-by-case basis and as appropriate to the specific group, such as; email, phone calls,

Category of relevant person	Typically accepted form of communication
	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 is 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.

As detailed in **Section 5.6** and **Section 7.8.2**, if comments and feedback are received after the EP has been submitted, Woodside is open to considering those comments and feedback on its EPs and update controls as appropriate, at all stages during the life of the EP.

5.5 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.

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

Woodside accepts feedback and engages in consultation in order to achieve the aims set out in **Section 5.2**. Woodside recognises that there are persons and organisations that take a view that Woodside's operations and/or growth projects should be stopped or at least delayed as far as possible. Whilst Woodside assesses the merits of objections or claims received, it acknowledges NOPSEMA's guidance in its brochure entitled *Consultation on offshore petroleum environment plans information for the community*, which states that relevant persons are free to respond on any matter and raise any concern, however this may not be able to be considered if it is outside the scope or purpose of the environment plan and approval process, for example, statements of fundamental objection to offshore petroleum activities or information containing personal threats or profanities.

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 persons Woodside chose to contact (see **Section 5.3.4**). It assesses the merits of objections or claims, and, where appropriate, incorporates changes in the EP. This information is summarised in **Table 5-4** and **Table 5-5** of the EP.

In accordance with regulation 9(8) of the Environment Regulations, sensitive information (if any) in an EP, and the full text of any response by a relevant person to consultation under regulation11 A in the course of preparation of the plan, must be contained in the sensitive information part of the plan and not anywhere else in the plan.

5.6 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 7.8.2.1**), feedback and comments received from relevant persons continue to be assessed and responded to, as required, throughout the life of an EP, including during its assessment and once accepted, in accordance with the intended outcome of consultation (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 requires implementation or updates to meet the intended outcome of consultation (see **Section 5.2**), Woodside will apply its Management of Change and Review process as appropriate (see **Section 7.6**).

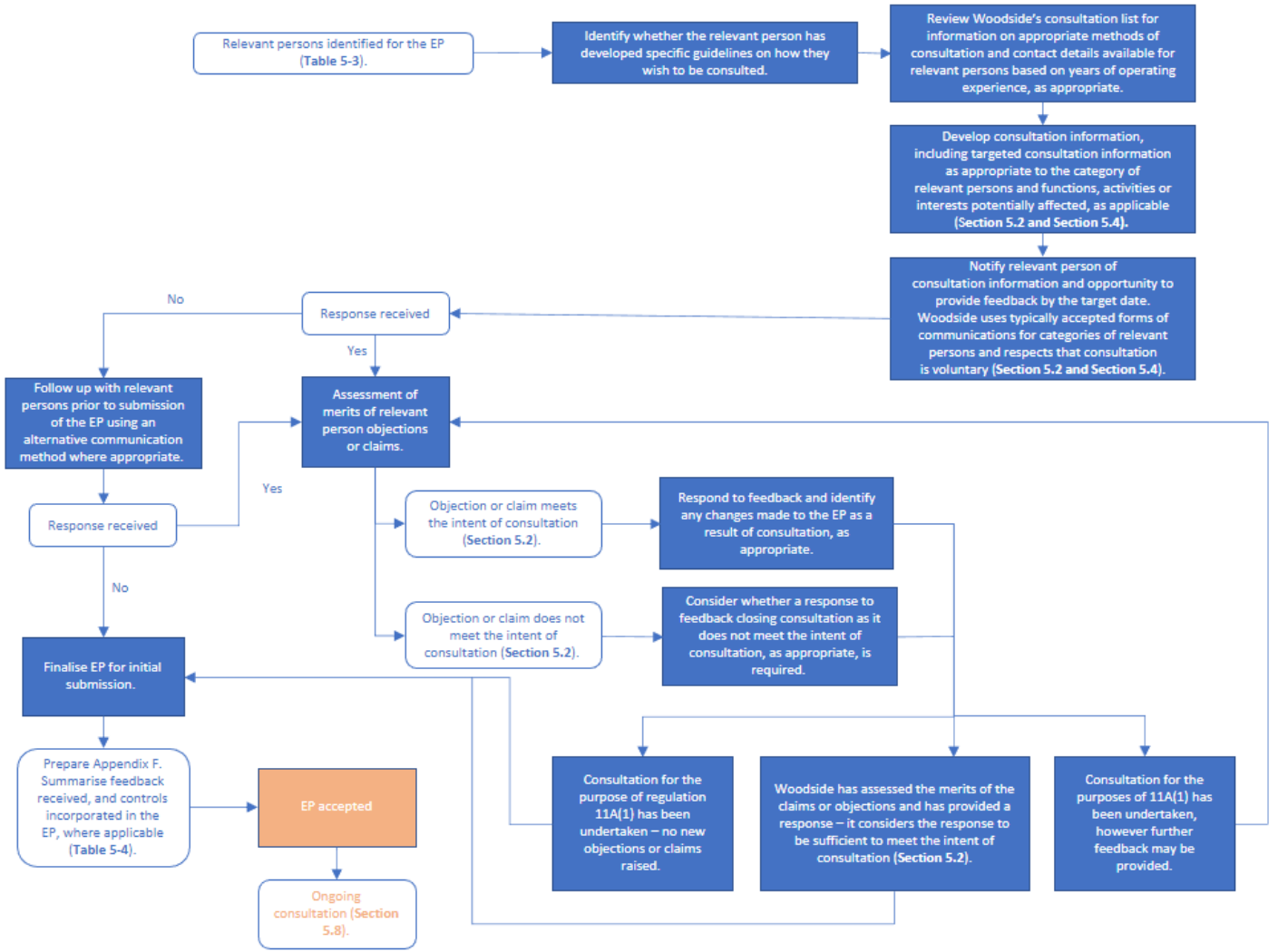


Figure 5-2: Overview of Woodside's consultation approach.

5.7 Identification of Relevant Persons for this EP

5.7.1 Identification of relevant persons under subregulation 11A(1)(a), (b) and (c)

Woodside's methodology for identifying relevant persons under regulations 11A(1)(a), (b) and (c) is as follows:

- Woodside considers the defined responsibilities of each of the departments and agencies to which the activities in the EMBA to be carried out 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 (March 2022) 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 in relation to the departments and agencies which Woodside has historically consulted over the years. This list is revised from time to time, for example, for the purposes of to 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 and determines 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 PAP 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 PAP. Feedback received, if any, is assessed in accordance with the intended outcome of consultation (as set out in **Section 5.2**).
- The list of those government departments and agencies assessed as relevant is set out in **Table 5-3**.
- Feedback received, if any, is assessed in accordance with the intended outcome of consultation (as set out in **Section 5.2**) and summarised at **Table 5-4** and **Table 5-5** 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. For instance, in this EP, Woodside has not consulted with the department for the Minister of the Northern Territory because there is no overlap given that the proposed activities are in Commonwealth waters offshore of Western Australia.

5.7.2 Identification of relevant persons under subregulation 11A(1)(d)

Relevant persons under regulation11A (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, or a revision of the EP. In identifying relevant persons, Woodside considers:

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

To identify relevant persons who fall within regulation 11A(1)(d), Woodside adopts the following methodology, and then undertakes consultation with relevant persons which is set out further in **Section 5.8**.

- Woodside assesses relevance based on overlap with risks and impacts from its proposed petroleum activities within the EMBA.
- This assessment will include applying professional judgement, knowledge and current literature and will vary depending on the type of person or organisation and as such, the relevant persons are determined by category as described in **Section 5-1** and identification methodology applied as set out in **Table 5-2**.
- The list of those persons or organisations assessed as relevant and persons or organisations Woodside chose to contact is set out in **Section 5-3**.
- Feedback received, if any, is assessed in accordance with the intended outcome of consultation (as set out in **Section 5.2**) and applying the categories of relevant persons methodology outlined in **Table 5-2**, as appropriate.
- Feedback from relevant persons is summarised at **Table 5-4**. Feedback from persons assessed as not relevant but whom Woodside choses to contact is summarised at **Table 5-5**.

Table 5-1: Categories of relevant persons

Category	Explanation
Commercial fisheries and peak representative bodies	Commonwealth or State Commercial Fishery with a fishery management plan recognised under the Commonwealth *Fisheries Management Act 1991* (Cth) *and* Western Australian *Fish Resources Management Act 1994 (*WA), which may be amended from time to time. Commonwealth peak fishery representative bodies are identified by AFMA. WAFIC is the peak representative body for state fishers in Western Australia.
Recreational marine users and peak representative bodies	Charter boat, tourism and dive operators identified by DPIRD specific to the location of the proposed activity. Representative bodies are the recognised peak organisation(s) for recreational marine users.
Titleholders and Operators	Registered holder of an offshore petroleum title or GHG title governed by the *OPGGS Act* and associated regulations.
Peak industry representative bodies	Recognised peak organisation(s) for the oil and gas sector.

Category	Explanation
Traditional Custodians	Traditional Custodians are persons who are descended from Indigenous peoples, who self-identify and are recognised by the Traditional Custodian group.
Native Title Representative Bodies	A Representative Aboriginal/Torres Strait Islander Bodies (RATSIB) is a regional organisation appointed under the Native Title Act 1993 (NTA) to represent native title groups in their claims for native title recognition. Their functions are set out in Section 203B of the Native Title Act 1993 and include: 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 recognised local community reference/liaison groups or organisations	Local government governed by the *Local Government Act 1995* (WA) which is responsible for representing the local community. Recognised local community reference/liaison group or organisation in relation to oil and gas matters.
Other non-government groups or organisations	Non-government organisation with public website material targeting the proposed activity.
Research Institutes and local conservation groups or organisations	Research institutes are government or private institutions that conduct marine or terrestrial research. Local conservation groups are local non-government organisation that regularly conduct conservation activities focused on the local environment or wildlife.

Table 5-2: Methodology for identifying relevant persons within the EMBA undertaken under subcategory 11 A (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 4.1**). • Woodside acknowledges WAFIC's consultation guidance (accessed on 2 February 2023), that titleholders develop separate consultation strategies for significant unplanned events (for example oil spill) where titleholders can demonstrate the likelihood of such events occurring is extremely low. WAFIC's guidance is that consultation on unplanned events resulting in an emergency scenario should only be undertaken if an incident occurs (see **Appendix H).** • For Commonwealth and State commercial fisheries, Woodside assesses the potential spatial and temporal extent for interaction with the fishery by reviewing AFMA ABARES and DPIRD Fishcube data within the PAA and EMBA (see **Section 4.9.2**). Assessment of relevance: • State commercial fisheries that have been assessed as having a potential for interaction within the PAA or EMBA (see **Section 4.9.2**) are assessed as relevant to the proposed activity. Woodside acknowledges WAFIC's consultation guidance (see above) and applies this by: - directly consulting fishery licence holders that are assessed as having a potential for interaction in the PAA; and - consulting fisheries that are assessed as having a potential for interaction in the EMBA via WAFIC. • Commonwealth commercial fisheries that have been assessed as having a potential for interaction within the PAA or EMBA (see **Section 4.9.2**) are assessed as relevant to the proposed activity.

Category	Relevant person identification methodology
	• 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: • From Woodside knowledge and operating experience, 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 next steps in its methodology: • Using WA Petroleum Titles (DMIRS-011) to determine overlap with other Titleholders or Operators permit areas within the EMBA. • From Woodside knowledge and operating experience, 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 next steps in its methodology: • Review of peak industry representative bodies responsibilities that Woodside actively participates in, with consideration of overlap between industry focus area and Woodside's proposed activities within the EMBA. • Review of Woodside's existing consultation list. • Website search to identify whether any additional peak industry representative bodies have been created whose responsibilities may overlap with Woodside's proposed activities within the EMBA. Assessment of relevance: • Peak industry representative bodies whose responsibilities are identified as having an overlap with Woodside's proposed activities within the EMBA are assessed as relevant.
Traditional Custodians	Consistent with its understanding of the matters discussed in **Section 4.9**, Woodside assesses relevance for Traditional Custodians using the following steps in its methodology: • In line with the "tri-partite test", Traditional Custodians are persons descended from Indigenous peoples, who self-identify and are recognised by the Traditional Custodian group. The "tripartite test" was described by Justice Brennan in the High Court case of Mabo v Queensland (No. 2) [1992] HCA 23 and has continued to be accepted and applied broadly, most recently by the High Court in a case that Love v Commonwealth

Category	Relevant person identification methodology
	of Australia [2020] HCA 3. As Woodside has more than 30 years of operating experience, over the years, it has undertaken extensive engagement with recognised Traditional Custodians for its operations. • Using the database of the National Native Title Tribunal to determine whether there are any Native Title Claims (historical or current) or Determinations overlapping or coastally adjacent to the EMBA. The original Native Title Claims are understood to represent the lands and waters over which Indigenous groups claim rights (including rights to conduct activities) and interests, and Native Title Determinations are understood to represent the lands and waters over which Indigenous groups have determined rights and interests and their representative institutions have certain functions (see Section 4 and below). • Where there is a positive determination of native title, contacting the Native Title Representative Body Corporate (also known as a Prescribed Body Corporate or PBC). The PBC is the body incorporated by native title holders to hold their native title rights and interests in perpetuity for them and is recognised by the Federal Court in its determination of native title as the appropriate representative body. Thereby the PBC becomes the governing and representative body for the native title group (Traditional Owner society) through which decisions relating to communal interests are made. • Where appropriate, contacting the relevant Native Title Representative Body to request a list of any Traditional Custodian groups asserting Traditional Custodianship over an area of coastline adjacent to the EMBA who do not and have never had a native title claim or determination of which the land council or Native Title Representative Body are aware. • Review of relevant Indigenous Land Use Agreements (ILUA), or similar agreements which Woodside has entered into or are publicly available, by which Aboriginal organisations or Traditional Custodian Groups have made a voluntary agreement regarding the use or management of areas of land or water overlapping the EMBA (see Section 4.1). ILUAs are registered with the Native Title Tribunal and provide additional indications of Traditional Custodian rights and interests. • 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. • Woodside applies the principles of self-determination when consulting with Traditional Custodians through consulting with representative institutions utilising traditional decision-making mechanisms. • Where the native title group is not clear or there is no representative institution, Woodside may seek guidance from the Native Title Representative Body as to the Traditional Custodian group whose rights and interests may overlap with the EMBA. Woodside may have reference to maps of native title claims and determinations produced by the National Native Title Tribunal, registered Indigenous Land Use Agreements, heritage databases and Indigenous Protected Areas. • Woodside will consult with individual Traditional Custodians where we have been directed to do so by the representative institution or the native title representative body. This may occur when for cultural reasons, and as recognised by the broader group, a person is regarded as having particular obligations in relation to a site or area that are distinct from that of the broader group. Woodside will consult with individual Traditional Custodians where they self-identify in response to broader notification and advertising, or at community information sessions. Assessment of relevance: • Where there is a positive determination or claim of native title overlapping the EMBA or coastally adjacent to the EMBA, the representative institution will be the PBC (also referred to as the Registered Native Title Body Corporate) for the native title group and assessed as relevant. • Where a relevant Native Title Representative Body provides advice that any Traditional Custodian groups are asserting Traditional Custodianship over an area of coastline adjacent to the EMBA who do not and, have never had a native title claim or determination of which land council or Native Title Representative Body are aware, Woodside will engage with the group to determine relevance.

Category	Relevant person identification methodology
	• Where there is an Indigenous Land Use Agreements (ILUA) whereby Aboriginal organisations or Traditional Custodian Groups have made a voluntary agreement regarding the use or management of areas of land or water overlapping or coastally adjacent to the EMBA, the PBC for the native title group are assessed as relevant. Where there is more than one Traditional Custodian group that is party to an ILUA, the Traditional Custodian group whose native title claim/determination overlaps the EMBA, where applicable, is assessed as relevant. • Where Woodside has entered into an agreement with an Aboriginal organisation or Traditional Custodian group or there is an agreement publicly available regarding the use or management of areas of land or water overlapping or coastally adjacent to the EMBA, Woodside will engage with the organisation or group to determine relevance. • In the WA context, when an Aboriginal Corporation is appointed as a Local Aboriginal Cultural Heritage Service (LACHS) under the Aboriginal Cultural Heritage Act 2021, the LACHS will be the representative institution for the group and assessed as relevant. • Where a Traditional Custodian group is referenced as having traditional rights and interests in a marine park management plan overlapping the EMBA, Woodside will consult the organisation or group to determine whether there is any intersect of the organisation or group's functions, interests and activities with risks and impacts from the proposed petroleum activity and assess feedback, if any, to determine relevance. • Where Woodside has been provided guidance from the native title representative body or land council as to the appropriate Traditional Custodian group to be consulted, Woodside will assess feedback from the group or groups, if any, to assess and determine relevance. • Where Woodside receives feedback from a person or organisation that identifies as a Traditional Custodian for an area overlapping the EMBA, including via an advertisement, Woodside will assess the feedback provided including whether the person(s) functions, interests and activities are represented by virtue their membership of a PBC, and determine relevance. Where it is not clear whether the person(s) is a member of a PBC or native title group that Woodside has determined relevant in line with the above methodology, Woodside will engage the PBC or native title group to determine whether the person(s) membership.
Native Title Representative Bodies	Woodside assesses relevance for Native Title Representative Bodies using the following steps in its methodology: • A Representative Aboriginal/Torres Strait Islander Bodies (RATSIB) is a regional organisation appointed under the Native Title Act 1993 (NTA) to represent native title groups in their claims for native title recognition. Their functions are set out in Section 203B of the Native Title Act 1993 and include: facilitation and assistance; certification; dispute resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies. • Review of the Australian Government Office of the Registrar of Indigenous Corporations to determine whether a Native Title Representative Body is the nominated representative of a PBC that has been assessed as relevant (see above) and confirming that representative status with both the Native Title Representative Body and the PBC. • Review of National Native Title Tribunal RATSIB areas that overlap or are coastally adjacent to the EMBA. Assessment of relevance: • Where there is a nominated Native Title Representative Body for a PBC or native title group with Native Title Claims (historical or current) or Determinations overlapping or coastally adjacent to the EMBA, the Native Title Representative Body will be assessed as relevant. • 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 next steps in its methodology:

Category	Relevant person identification methodology
	• Using the Australasian Underwater Cultural Heritage Database to assess any known records Maritime Cultural Heritage sites (shipwrecks, aircraft and relics) within the EMBA (see **Section 4.9.1**). 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 next 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 any overlap between the local government's defined area of responsibility and the EMBA. • Woodside hosts regular community reference/liaison group meetings. Members represent a cross-section of the community and local towns interests. Representatives are from community and industry and generally include, Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, Industry representative bodies, Community and industry organisations. Woodside considers these reference/liaison groups to be the appropriate recognised representatives of the local community for the oil and gas sector. • Woodside reviews the community reference/liaison group's terms of reference to determine its area of responsibility and any overlap with the EMBA. For example, the Exmouth Community Liaison Group's area of responsibility in relation to Woodside's operational, development and planning activities, is defined in the terms of reference as the Exmouth sub-basin. Comparatively, the Karratha Community Liaison Group's area of responsibility is the Pilbara region (i.e. onshore). Assessment of relevance: • The local government whose defined area of responsibility overlaps the EMBA is assessed as relevant. • The community reference/liaison group whose defined area of responsibility overlaps the EMBA is assessed as relevant and consulted collectively via the relevant reference/liaison group.
Other non-government groups or organisations	Woodside assesses relevance for other non-government groups or organisations using the following next steps in its methodology: • Review of Woodside's existing consultation list. • Website search of registered non-government groups or organisations (i.e. registered with an Australian Business Number (ABN) and publicly available contact information) that may have public website material specific to the proposed activity at the time of development of the EP. • Organisation has a publicly available mission statement (or purpose) that clearly describes their collective functions, interests or activities. • Review of current website material to identify targeted information which demonstrates functions, interests or activities relevant to the potential risks and impacts associated with planned activities. 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 (as set out in **Section 5.2**) 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 next steps in its methodology: • Review of Woodside's existing consultation list. • Website search for research institutes that may operate within the EMBA. This assessment is both activity and location based.

Category	Relevant person identification methodology
	• Website search for local conservation groups or organisations that regularly conduct conservation activities within the EMBA. Assessment of relevance: • Where there is known research being undertaken by a research institute within the EMBA, the research institute that is conducting the research will be assessed as relevant. • Local environmental conservation groups who regularly conduct conservation activities or have demonstrated conservation functions, interests or activities within the EMBA are assessed as relevant. This assessment is both activity and location based.

5.7.3 Identification of relevant persons under regulation 11A(1) (e)

Woodside adopts a case-by-case approach for each EP to assess relevance under regulation11A(1)(e).

5.7.4 Assessment of Relevant Persons and Additional Persons for the Proposed Activity

The result of Woodside's assessment of relevant persons in accordance with Regulation 11A(1) is outlined at **Table 5-4.**

Persons or organisations that Woodside assessed as not relevant but nonetheless chose to contact at its discretion in accordance with **Section 5.3.4** are outlined at **Table 5-5**.

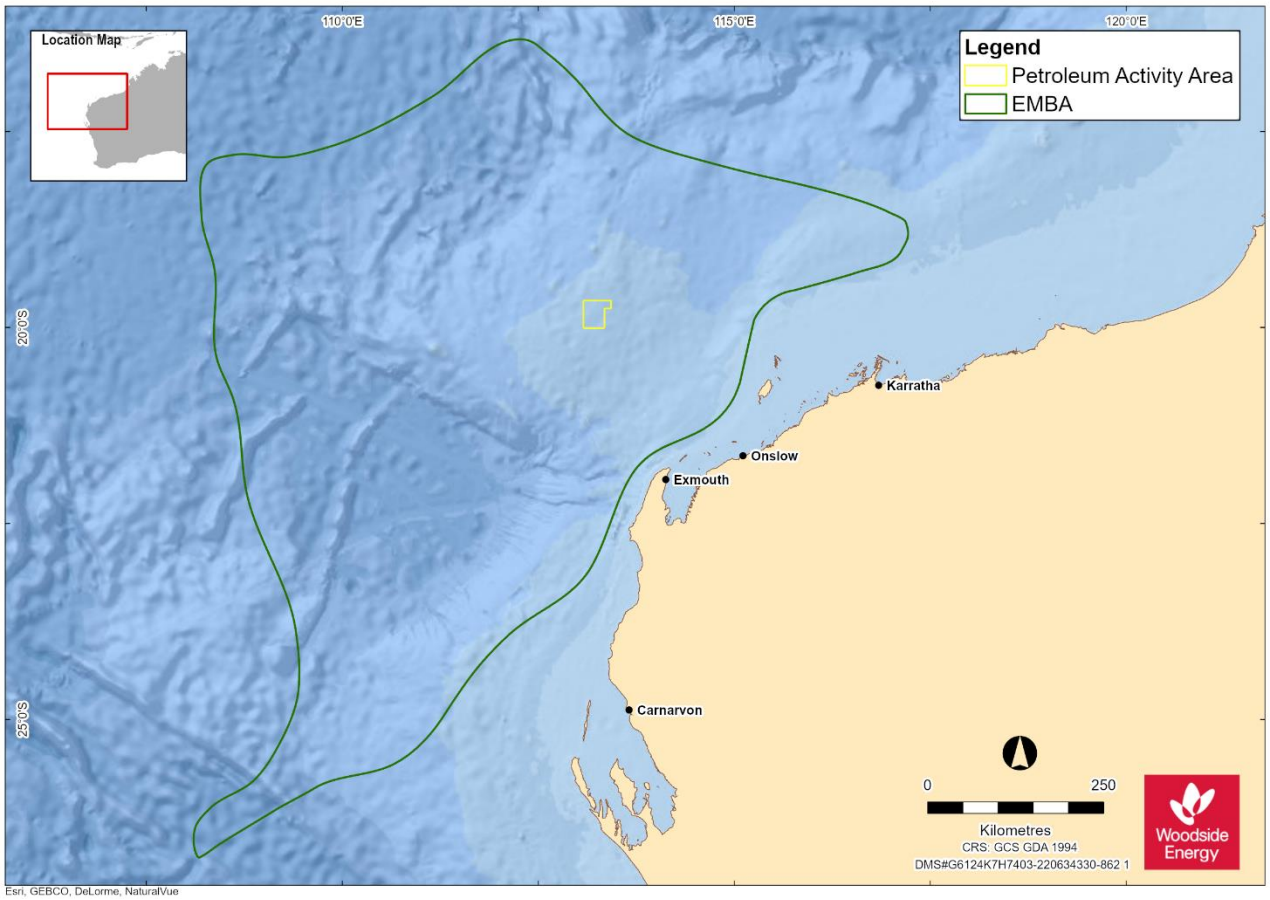


Figure 5-3: Operational Area and EMBA for this EP.

Table 5-3: 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 11A(1)(a). ABF's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
Australian Fisheries Management Authority (AFMA)	Responsible for managing Commonwealth fisheries	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). The North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA. AFMA's responsibilities may be relevant to the activity as the North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA.	Yes
Australian Hydrographic Office (AHO)	Responsible for maritime safety and Notices to Mariners	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). 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 11A(1)(a). 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 11A(1)(a). 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 (formerly DAWE)	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 11A(1)(a). The North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		DAFF – Fisheries' (formerly DAWE) responsibilities may be relevant to the activity as the North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA.	
Department of Defence (DoD)	Responsible for defending Australia and its national interests.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). 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 – environment' under regulation 11A(1)(b). No State fisheries are active in the PAA. The Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2 and 3), Nickol Bay Managed Fishery, Onslow Prawn Managed Fishery, Gascoyne Demersal Scalefish Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Western Australian Sea Cucumber Fishery and Pilbara Line Fishery are active in the EMBA. DPIRD's responsibilities may be relevant to the activity as the government department responsible for State fisheries.	Yes
Department of Transport (DoT)	Legislated responsibility for oil pollution response in State waters	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(b). 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 – environment' under regulation 11A(1)(b). There is known Maritime Cultural Heritage overlapping the EMBA.	Yes
Pilbara Ports Authority	Responsible for the operation of the Port of Dampier.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(b). The proposed activity does not have the potential to impact Pilbara Ports Authority's responsibilities as the EMBA does not overlap the Pilbara Ports Authority's area of responsibility.	No

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 – Environment			
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel) (formerly DAWE)	DAFF administers, implements and enforces the Biosecurity Act 2015. The Department requests to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health regulations and that any biosecurity risk is managed. The Department requests to be consulted where an activity involves the movement of aircraft or vessels between Australia and offshore petroleum activities either inside or outside Australian territory.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(a). DAFF – Biosecurity's (formerly DAWE) responsibilities may be relevant to the proposed activities in the EMBA in the prevention of introduced marine species.	Yes
Department of Climate Change, Energy, the Environment and Water (DCCEEW) (formerly DAWE)	Responsible for implementing Commonwealth policies and programs to support climate change, sustainable energy use, water resources, the environment and our heritage. Administers the Underwater Cultural Heritage Act 2018 in collaboration with the States, Northern Territory and Norfolk Island, which is responsible for the protection of shipwrecks, sunken aircraft and other types of underwater heritage	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(a). DCCEEW's (formerly DAWE) responsibilities may be relevant to the proposed activities in the EMBA as there are potential environmental impacts from the proposed activity. There are 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
	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 11A(1)(a). DNP's responsibilities may be relevant to the activity as DNP requires an awareness of activities that occur within AMPs, and an understanding of potential impacts and risks to the values of parks (NOPSEMA guidance note: N-04750-GN1785 A620236, June 2020). Titleholders are required to consult DNP on offshore petroleum and greenhouse gas exploration activities if they occur in, or may impact on the values of marine parks, including where potential spill response activities may occur in the event of a spill (i.e. scientific monitoring).	Yes
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	Supports the DBCA to manage the Ningaloo Coast World Heritage Area.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(a). The proposed activity does not have the potential to impact NCWHAC's responsibilities as the EMBA does not overlap the Ningaloo Marine Park.	No
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 11A(1)(b). The proposed activity does not overlap 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) (formerly DISER)	Department of relevant Commonwealth Minister.	Required to be consulted under regulation 11A(1)(a).	Yes
Department of Mines, Industry Regulation and Safety (DMIRS)	Department of relevant State Minister	Required to be consulted under regulation 11A(1)(c).	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 and Trawl Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. 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 11A(1)(d). Although the fishery overlaps the PAA and EMBA it has not been active in the PAA 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 11A(1)(d). Although the fishery overlaps the PAA, it has not been active in the PAA within the last 5 years. The fishery 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 11A(1)(d). Although the fishery overlaps the PAA and EMBA it has not been active in the PAA 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
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 11A(1)(d).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Although the fishery overlaps the PAA, it has not been active in the PAA within the last 5 years. The fishery has been active in the EMBA within the last 5 years.	
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 11A(1)(d). The North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA. CFA's functions may be relevant to the activity as the North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA.	Yes
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	Represents the interests of the Southern Bluefin Tuna Fishery and Western Skipjack Fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The Southern Bluefin Tuna Fishery has been assessed as not relevant to the proposed activity. As the peak representative body for the Southern Bluefin Tuna Fishery, the ASBTIA has also been assessed as not relevant. Woodside has provided information to the ASBTIA at its discretion in line with Section 5.3.4 on AFMA advice that it expects all Commonwealth fishers who have entitlements to fish within the proposed area to be consulted, which can be through the relevant fishing industry associations.	No
Tuna Australia	Represents the interests of the Western Tuna and Billfish Fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The Western Tuna and Billfish Fishery is active in the EMBA. Tuna Australia's functions, interests or activities may be relevant to the activity as the Western Tuna and Billfish Fishery is active in the EMBA.	Yes
Pearl Producers Association (PPA)	Peak representative organisation of The Australian South Sea Pearling Industry, with members in Western Australia and the Northern Territory	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The Pearl Oyster Managed Fishery has been assessed as not relevant to the proposed activity. As the peak representative body for the Pearl Oyster Managed Fishery, the PPA has also been assessed as not relevant.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
State Commercial fisheries and representative bodies			
Marine Aquarium Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the PAA it has not been active in the PAA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders from planned activities, given the fishery generally collects fish in water depths less than 30 m. The fishery has been active in the EMBA in the last 5 years.	Yes
South West Coast Salmon Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the PAA and EMBA, the fishery has not been active in the PAA 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).	No
Mackerel Managed Fishery (Area 2 and 3)	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although Area 3 of the fishery overlaps the PAA, it has not been active in the PAA within the last 5 years. Area 2 and Area 3 of the fishery has been active in the EMBA in the last 5 years.	Yes
Pilbara Crab Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the PAA and EMBA, the fishery has not been active in the PAA or EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders given all waters of the fishery north of 23° 34' S and west of 115° 06.50' E (inclusive of the PAA) have been closed to fishing since the formation of the fishery.	No
West Coast Deep Sea Crustacean Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the PAA, the fishery has not been active in the PAA within the last 5 years.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The fishery has been active in the EMBA in the last 5 years.	
Specimen Shell Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. The fishery has been active in the EMBA within the last 5 years.	Yes
Onslow Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. The fishery has been active in the EMBA within the last 5 years.	Yes
Pearl Oyster Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. The fishery overlaps the EMBA but 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 fishing methods and location for species fished by licence holders (fishing effort is mostly focussed in shallow coastal waters of 10-15 m depth, with a maximum depth of 35 m) (Lulofs rt al. 2002).	No
Nickol Bay Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. The fishery overlaps the EMBA but has not been active in the EMBA within the last 5 years.	Yes
Western Australian Sea Cucumber Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the PAA, the fishery has not been active in the PAA within the last 5 years. Due to water depth, distance offshore, and distance from popular fishing spots, fishers do not collect sea cucumber within the PAA. The fishery has not been active in the EMBA within the last 5 years.	Yes
Gascoyne Demersal Scalefish Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The fishery does not overlap the PAA. The fishery has been active in the EMBA within the last 5 years.	
West Coast Rock Lobster Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. The fishery overlaps the EMBA but has not been active in the EMBA in the last 5 years.	No
Abalone Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. The fishery overlaps the EMBA but has not been active in the EMBA in the last 5 years.	No
West Coast Demersal Gillnet & Demersal Longline Interim Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. The fishery overlaps the EMBA but has not been active in the EMBA in 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 11A(1)(d). The fishery does not overlap the PAA. The fishery has been active in the EMBA within the last five years.	Yes
Pilbara Trap Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the PAA. The fishery has been active in the EMBA within the last five years.	Yes
Pilbara Line Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the PAA, it has not been active in the PAA within the last 5 years. The fishery has been active in the EMBA in the last 5 years.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 11A(1)(d). No State fisheries are active in the PAA. The Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2 and 3), Nickol Bay Managed Fishery, Onslow Prawn Managed Fishery, Gascoyne Demersal Scalefish Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Specimen Shell Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery, Western Australian Sea Cucumber Fishery and Pilbara Line Fishery are active in the EMBA. WAFIC's functions may be relevant to the activity as the peak representative body for State fisheries.	Yes
Recreational marine users and representative bodies			
Karratha recreational marine users	Karratha-based dive, tourism and charter operators	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 11A(1)(d). Activities have the potential to impact Karratha-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Exmouth recreational marine users	Exmouth-based dive, tourism and charter operators	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 11A(1)(d). Activities have the potential to impact Exmouth-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
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 11A(1)(d). Activities have the potential to impact Gascoyne-based dive, tourism and charter operator's functions, interests or activities due to the location of activities and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
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 11A(1)(d). 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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Recfishwest	Represents the interests of recreational fishers in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 11A(1)(d). 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 11A(1)(d). 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 11A(1)(d). 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 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Western Gas	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). 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 11A(1)(d). 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 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
INPEX Alpha Ltd	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Carnarvon Energy Ltd	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). 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 11A(1)(d). 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 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Tokyo Gas Gorgon	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). 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 11A(1)(d). 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 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Kyushu Electric Wheatstone	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). 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 11A(1)(d). 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
Fugro Exploration	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Finder No 9 /10 / 17	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). 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 11A(1)(d). 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 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
OMV Australia / Sapura OMV Upstream	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Lightmark Enterprises	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). 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 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP) acting for a consortium of operators	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). During the course of preparing the EP, NERA CSEP self-identified and requested to be consulted. 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
Peak Industry Representative bodies			
APPEA	Represents the interests of oil and gas explorers and producers in Australia.	Woodside has applied its methodology for 'Peak Industry Representative bodies' under regulation 11A(1)(d). APPEA's responsibilities are identified as having an intersect with Woodside's planned activities in the EMBA.	Yes
Traditional Custodians			
Murujuga Aboriginal Corporation (MAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The EMBA does not overlap and is not coastally adjacent to a native title claim, determination or ILUA held by MAC. The EMBA does not overlap the Murujuga National Park. Woodside has consulted with MAC with regards to the Scarborough project area generally since 2018 and MAC has been involved in ethnographic surveys that included the planned activities of this EP. MAC is the approved body corporate under the Burrup and Maitland Industrial Estates Agreement (BMIEA) which underpins land access for the onshore component of the Scarborough project. 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. 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. Further, Woodside has applied the principles of self-determination by ensuring we consult through the Representative Aboriginal Corporation. As a further step, Woodside engaged YMAC as the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia, to confirm the best approach to confirm additional cultural values (if any) for the broader Scarborough Project, the scope of which included the proposed activity for this EP. YMAC advised that the most appropriate stakeholders for the Scarborough project generally are MAC and NAC, who are not represented by YMAC (refer to Section 7.8.2.1).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Ngarluma Aboriginal Corporation (NAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The Ngarluma People native title claim does not overlap the EMBA. The claim, for, which NAC is the Registered Native Title Body Corporate, is coastally adjacent to the EMBA. The Ngarluma/Yindjibarndi native title claim does not overlap the EMBA. The claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Bodies Corporate, is coastally adjacent to the EMBA. NAC is party to the RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement) and Anketell Port, Infrastructure Corridor and Industrial Estates Agreement which are coastally adjacent to the EMBA. As an additional measure, Woodside, at its discretion, chose to seek guidance from YMAC, as the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia to confirm the best approach to confirm additional cultural values (if any) for the broader Scarborough Project, the scope of which included the proposed activity for this EP. YMAC advised that the most appropriate stakeholders for the Scarborough project generally are MAC and NAC, who are not represented by YMAC (refer to Section 7.8.2.1).	Yes
Wirrawandi Aboriginal Corporation (WAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The Yaburara & Mardudhunera People claim does not overlap the EMBA. The claim, for which WAC is the Registered Native Title Body Corporate, is coastally adjacent to the EMBA. WAC is party to the Cape Preston Project Deed (YM Mardie ILUA), Cape Preston West Export Facility ILUA , and KM & YM ILUA, which are coastally adjacent to the EMBA.	Yes
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim does not overlap the EMBA. The claim, for which NTGAC and YAC are the Registered Native Title Bodies Corporate, is coastally adjacent to the EMBA. The NTGAC is also party, with the WA State Government, to the Ningaloo Conservation Estate Indigenous Land Use Agreement (the ILUA) which is coastally	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		adjacent to the EMBA. The NTGAC is also party to the Gnarloo ILUA, which is coastally adjacent to the EMBA. The NTGAC's nominated representative is the 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.	
Yinggarda Aboriginal Corporation (YAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim does not overlap the EMBA. The claim, for which NTGAC and YAC are the Registered Native Title Bodies Corporate, is coastally adjacent to the EMBA, which the Baiyungu, Thalanyji and Yinggarda people are party to. YAC is party to the Brickhouse and Yinggarda Aboriginal Corporation ILUA and Quobba – Yinggarda Pastoral ILUA, which are coastally adjacent to the EMBA. The YAC nominated representative was the YMAC and the YAC executive officer and contact officer pursuant to the Corporations (Aboriginal and Torres Strait Islander) Act 2006 is employed by YMAC. Woodside therefore consulted YAC, via YMAC. Woodside was advised that as of late April 2023, the nominated representative for YAC was now Gumala Aboriginal Corporation.	Yes
Robe River Kuruma Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). There are no native title claims that the Robe River Kuruma Aboriginal Corporation is party to overlapping the EMBA or coastally adjacent to the EMBA. The Robe River Kuruma Aboriginal Corporation is party to the RTIO Kuruma Marthudunera People ILUA and KM & YM ILUA, which are coastally adjacent to the EMBA.	Yes
Yindjibarndi Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The Ngarluma/Yindjibarndi native title claim does not overlap the EMBA. The claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Bodies Corporate, is coastally adjacent to the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The Thalanyji native title claim does not overlap the EMBA. The claim, for which BTAC is the Registered Native Title Body Corporate, is coastally adjacent to the EMBA. BTAC is also party to the Macedon ILUA which is coastally adjacent to the EMBA.	Yes
Malgana Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The Malgana Part A native title claim does not overlap the EMBA. The claim, for which the Malgana Aboriginal Corporation is the Registered Native Title Body Corporate, is adjacent to the EMBA. The Nanda People Part B, Malgana 2 and Malgana 3 native title claim does not overlap the EMBA. The claim, for which the Malgana Aboriginal Corporation and Nanda Aboriginal Corporation are the Registered Native Title Bodies Corporate, is coastally adjacent to the EMBA. The Malgana Aboriginal Corporation is party to the Malgana Woodleigh Carbla Pastoral Lease Agreement, Malgana Wooramel Pastoral Lease Agreement and Malgana Tamala Pastoral Lease Agreement, which are coastally adjacent to the EMBA.	Yes
Nanda Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation 11A(1)(d). The Nanda People and Nanda #2 native title claim does not overlap the EMBA. The claim, for which the Nanda Aboriginal Corporation is the Registered Native Title Body Corporate, is coastally adjacent to the EMBA. The Nanda People Part B, Malgana 2 and Malgana 3 native title claim does not overlap the EMBA. The claim, for which the Malgana Aboriginal Corporation and Nanda Aboriginal Corporation are the Registered Native Title Bodies Corporate, is coastally adjacent to the EMBA.	Yes
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians' under regulation11 A 1 (d). NYFL is the entity representing the interests of the Ngarluma and Yindjibarndi people under the Northwest Shelf Agreement 1998 with Woodside and joint venture partners.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The determination of the competing Native Title claims resulted in no native title being found over the lands subject to the Northwest Shelf Agreement 1998 or below the low water mark. It is noted that the appropriate representative bodies for the Ngarluma and Yindjibarndi peoples outside of the Northwest Shelf Agreement 1998 are the Ngarluma Aboriginal Corporation and the Yindjibarndi Aboriginal Corporation.	
Native Title Representative Bodies			
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 11A(1)(d). 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 and Nanda Aboriginal Corporation's nominated representative is YMAC. Woodside has therefore consulted the NTGAC and Nanda Aboriginal Corporation via YMAC. YMAC was also the nominated representative for YAC. Woodside was advised that as of late April 2023, the nominated representative for YAC is now Gumala Aboriginal Corporation. Woodside contacted YMAC to seek guidance with respect to the appropriate Traditional Custodian group(s) to engage with respect to the proposed activity where this was not clear. YMAC's functions may be relevant to the proposed activity in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation.	Yes
Historical cultural heritage groups or organisations			
Western Australian Museum	Manages 200 shipwreck sites of the 1,500 known to be located off the Western Australian coast.	Woodside has applied its methodology for 'Historical cultural heritage groups or organisations' under regulation 11A(1)(d). There are known shipwrecks overlapping the EMBA which the Western Australian Museum may be responsible for.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 11A(1)(d). The Shire of Exmouth's area of responsibility does not overlap the EMBA. The Shire of Exmouth was consulted as a member of the Exmouth Community Reference Group. Under regulation11 A 1 (e), Woodside, at its discretion, chose to assess the Shire of Exmouth as a relevant person.	Yes
City of Karratha	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Baynton, Baynton West, Bulgarra, Cossack, Dampier, Gap Ridge, Karratha, Karratha Industrial Estate, Jingarri, Madigan, Millars Well, Nickol, Pegs Creek, Point Samson, Roebourne, Whim Creek and Wickham.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The City of Karratha's area of responsibility does not overlap the EMBA. The City of Karratha was consulted as a member of the Karratha Community Liaison Group. Under regulation11 A 1 (e), Woodside, at its discretion, chose to assess the City of Karratha as a relevant person.	Yes
Exmouth Community Reference Group (CRG) Base Marine Bgahwan Marine Cape Conservation Group Inc. DBCA Department of Defence Department of Transport Exmouth Bus Charter Exmouth Chamber of Commerce and Industry	The Exmouth CRG 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 11A(1)(d). The Exmouth CRG's area of responsibility under its terms of reference overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Exmouth District High School Exmouth Freight and Logistics Exmouth Game Fishing Club Exmouth Tackle and Camping Supplies Exmouth Visitors Centre Exmouth Volunteer Marine Rescue Fat Marine Gascoyne Development Commission Gun Marine Services Ningaloo Lodge Offshore Unlimited Shire of Exmouth BHP Petroleum Santos Community Member			
Karratha Community Liaison Group (KLG) WA Police Karratha Health Care Development WA Ngarluma Yindjibarndi Foundation Ltd (NYFL) * Department of Education Pilbara Ports Authority Regional Development Australia	The KLG 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 11A(1)(d). The KLG's area of responsibility under its terms of reference does not overlap the EMBA. Under regulation11 A 1 (e), Woodside, at its discretion, chose to assess the KLG as a relevant person.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Pilbara Development Commission Dampier Community Association City of Karratha Karratha & Districts Chamber of Commerce and Industry Horizon Power Murujuga Aboriginal Corporation (MAC)* Department of Local Government, Sport and Cultural Industries *MAC and NYFL were consulted directly as described above.			
Other non-government groups or organisations			
350 Australia (350A)	Non-government organisation	During the course of preparing the EP, 350A self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that 350A'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).	Yes
Australasian Centre for Corporate Responsibility (ACCR)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine ACCR's relevance for the proposed activity. 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). Woodside chose to contact ACCR at its discretion in line with Section 5.3.4.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Australian Conservation Foundation (ACF)	Non-government organisation	During the course of preparing the EP, ACF self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that ACF's public website material and feedback 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).	Yes
Australian Marine Conservation Society (AMCS)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine AMCS's relevance for the proposed activity. Woodside has assessed that AMCS'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).	Yes
Climate Council	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine Climate Council's relevance for the proposed activity. Woodside has assessed that Climate Council'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). Woodside chose to contact Climate Council at its discretion in line with Section 5.3.4.	No
Conservation Council of Western Australia (CCWA)	Non-government organisation	During the course of preparing the EP, CCWA self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that CCWA'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).	Yes
Doctors for the Environment (DEA)	Non-government organisation	During the course of preparing the EP, DEA self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that DEA's public website material and feedback 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). Woodside chose to contact DEA at its discretion in line with Section 5.3.4.	
Extinction Rebellion WA (XRWA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine XRWA's relevance for the proposed activity. Woodside has assessed that XRWA'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). Woodside chose to contact XRWA at its discretion in line with Section 5.3.4.	No
Friends of Australian Rock Art. Inc (FARA)	Non-government organisation	During the course of preparing the EP, FARA self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that FARA's public website material and feedback 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). Woodside chose to contact FARA at its discretion in line with Section 5.3.4.	No
Greenpeace Australia Pacific (GAP)	Non-government organisation	During the course of preparing the EP, GAP self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that GAP's public website material and feedback 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).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
International Fund for Animal Welfare (IFAW)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine IFAW's relevance for the proposed activity. Woodside has assessed that IFWA'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). Woodside chose to contact IFAW at its discretion in line with Section 5.3.4.	No
Lock The Gate Alliance (LTGA)	Non-government organisation	During the course of preparing the EP, LTGA self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that LTGA's public website material and feedback 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). Woodside chose to contact LTGA at its discretion in line with Section 5.3.4.	No
Market Forces	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine Market Force's relevance for the proposed activity. Woodside has assessed that Market Force'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). Woodside chose to contact Market Force at its discretion in line with Section 5.3.4.	No
Say No to Scarborough Gas (SNTSG)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine SNTSG's relevance for the proposed activity. Woodside has assessed that SNTSG's public website material and feedback 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).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Sea Shepherd Australia (SSA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine SSA's relevance for the proposed activity. Woodside has assessed that SSA'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).	Yes
The Wilderness Society (TWS)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine TWS's relevance for the proposed activity. Woodside has assessed TWS's public website material and feedback, with the latter demonstrating 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).	Yes
World Wildlife Fund (WWF) Australia	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine WWF's relevance for the proposed activity. Woodside has assessed that WWF'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). Woodside chose to contact WWF at its discretion in line with Section 5.3.4.	No
Research institutes and local conservation groups or organisations			
University of Western Australia (UWA)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11A(1)(d) to determine UWA's relevance for the proposed activity. 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 5.3.4.	No
Western Australian Marine Science Institution (WAMSI)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11A(1)(d) to determine WAMSI's relevance for the proposed activity.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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 5.3.4.	
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 11A(1)(d) to determine CSIRO's relevance for the proposed activity. There is no known research being undertaken by CSIRO that intersects within the EMBA. Woodside chose to contact CSIRO at its discretion in line with Section 5.3.4.	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 11A(1)(d) to determine AIMS's relevance for the proposed activity. 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 5.3.4.	No
Other			
Save Our Songlines (SOS) and/ or [redacted] and/ or [redacted]	Representatives of Non-Government Organisation Save Our Songlines and/ or individuals [redacted] and/ or [redacted]	Woodside has applied its methodology for "Traditional Custodians' and 'non-government organisations' under regulation 11A(1)(d) to determine Save Our Songlines (SOS) and/ or [redacted] and/ or [redacted]'s relevance for the proposed activity. During the course of preparing the EP, Save Our Songlines and/ or [redacted] and/ or [redacted] self-identified and requested to be consulted on Scarborough EPs. For the activity in this EP, there is no native title claim, determination or ILUA over these Commonwealth waters, which includes the PAA and EMBA. The PAA does not overlap any Commonwealth or State Marine Park Management Plans. The EMBA overlaps one Commonwealth Marine Park Management Plan. The EMBA does not overlap any State Marine Park Management Plans (Section 4.9). Woodside has applied the principles of self-determination in line with UNDRIP by consulting the Representative Aboriginal Corporation. The Mardudhunera language group is represented on Murujuga by MAC (see above).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Woodside has assessed that SOS and/ or [redacted] and/ or [redacted] feedback demonstrates an interest with the proposed activity.	
Woodside Come Clean	Campaign website	Woodside Come Clean is not a registered organisation (i.e. no Australian Business Number (ABN)) and has no contact details publicly available. As this is not a group or organisation, but rather a campaign website, it would not be reasonable for Woodside to consider relevance for the proposed activity, nor attempt to consult. Irrespective, Woodside has reviewed the Woodside Come Clean public website material and determined that the material does not demonstrate any intersect with potential direct impacts specific to the proposed petroleum activity, while remaining in accordance with the intended outcome of consultation (as set out in Section 5.2). Woodside notes that the Woodside Come Clean campaign website links to Say No to Scarborough Gas, which Woodside has consulted for the proposed activity.	No

5.8 Consultation activities and additional engagement

5.8.1 Subsea EP Consultation

The following is a summary of additional consultation undertaken for this EP:

- A Consultation Information Sheet was provided to relevant persons and persons Woodside chose to contact (see **Section 5.3.4**), which included details such as an activity overview, maps, a summary of key risks and/or impacts and management measures (**Appendix F**, **reference 1.1**).
- A supplementary information sheet containing frequently asked questions (FAQ) was also provided to relevant persons and persons Woodside chose to contact (see **Section 5.3.4**). Information was based on previous stakeholder interest and feedback regarding other planned Scarborough Project activities and related EPs (**Appendix F**, **reference 1.1**).
- An activity update Consultation Information Sheet was provided to relevant persons and persons Woodside chose to contact (see **Section 5.3.4**), which included an update regarding planned activities, information regarding the EMBAs for this EP and additional information relating to mitigation and managements measures for this EP (**Appendix F**, **reference 1.107**).
- Since the commencement of the initial consultation period (21 September 2022), the Stakeholder Consultation Information Sheet has also been available on Woodside's website and the activity update Consultation Information Sheet has been available on the Woodside website since 17 January 2023. The Information Sheets include a toll-free 1800 phone number and Woodside's feedback email address (feedback@woodside.com.au).
- A bespoke targeted Consultation Information Sheet was provided to relevant Traditional Custodian groups (**Appendix F**, **reference 1.108**, **1.109**). and phone calls to provide context to the consultation made.
- Additional targeted information was provided to relevant marine users including Commonwealth and State fisheries, fishery representative bodies, AHO and AMSA – Marine Safety. The targeted information included maps and additional information relevant to the specific category of persons.
- A community barbeque was held on 5 May 2023 and 10 May 2023 in Roebourne. Ahead of the events, Woodside advertised the barbeque via posters (**Appendix F**, **reference 1.214**) displayed on community notice boards. The event was also advertised via the Roebourne Community Calendar and posted on Woodside's social media in the lead up to the events (**Appendix F**, **reference 1.214**). Representatives from Woodside attended the event and provided copies of the Consultation Information Sheet to attendees and answered community questions.
- From 3 May 2023, Woodside commenced a geotargeted sponsored social media campaign (**Appendix F**, **reference 1.215**) to various local government authorities that are coastally adjacent to the EMBA for the proposed activities. The purpose of this campaign was to bring Woodside's proposed activities to the attention of persons who may be interested, advising persons or organisations how they can find out about Woodside's proposed activities by visiting Woodside's consultation activities page of the website and how 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 30-day feedback period.

- Where feedback was sought and consultation information had been publicly available for an extended period, and the consultation period had closed, Woodside provided a further 14-day period for feedback. Woodside considers this to be a reasonable period for consultation in accordance with the Regulations given the extended timeframe the consultation information had been publicly available to interested parties. For this EP, this includes a public comment period (see above), consultation information being publicly available on Woodside's website, newspaper advertising in national, state and local newspapers (see *Section 5.3.4*) and the EP being published for assessment and available on the NOPSEMA website.
- 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**).
- Woodside hosted community reference group information sessions with the Karratha Community Liaison Group and the Exmouth Community Liaison Group, where updates on the proposed activity were provided.
- Woodside hosts regular heritage meetings to which Mardudhunera, Ngarluma, Yaburara and Wong-Goo-Tt-Oo representatives are invited. Meetings were held on 19 March 2021, 10 June 2021, 20 September 2021, 13 December 2021, 28 March 2022, 17 June 2022, 25 October 2022 and 21 March 2023, where updates on the proposed activity were provided (see **Table 5-4**).
- Woodside advertised the planned activities proposed for this EP in a national, state and relevant local newspapers including The Australian, The West Australian, Pilbara News, Midwest Times, North West Times (18 January 2023) and Geraldton Times (20 January 2023) (see **Appendix F**, **reference 1.110**). No comments or feedback were received from the advertisements.
- Consultation activities undertaken with relevant persons are summarised at **Table 5-4**.
- Engagement undertaken with persons or organisations Woodside assessed as not relevant but chose to contact (see **Section 5.3.2**) are summarised at **Table 5-5.**

Table 5-4: Consultation Report with Relevant Persons or Organisations

Commonwealth and WA State Government Departments or Agencies - Marine		
Australian Border Force (ABF)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed ABF advising of the proposed activity (Appendix F, references 1.2 and 1.3) and provided a Consultation Information Sheet and Consultation FAQ. ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.67). ● On 27 January 2023, Woodside emailed ABF with an update on the proposed activity (Appendix F, reference 1.122) and provided an updated Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (reference 1.161).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	Woodside has addressed maritime security-related issues in **Section 6** of this EP based on previous offshore activities. No additional measures or controls are required
Australian Fisheries Management Authority (AFMA)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed AFMA advising of the proposed activity (Appendix F, reference 1.4) and provided a Consultation Information Sheet, Consultation FAQ and a fisheries map. ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.68). ● On 19 October 2022, AFMA emailed Woodside: – AFMA advised it had no specific comment on the proposal and encouraged Woodside consult with operators who have entitlements to fish within the proposed area. ● On 1 November 2022, Woodside emailed AFMA Woodside confirmed it had provided information to relevant fishery licence holders as well as representative organisations on behalf of Commonwealth fishing licence holders who have entitlements to fish within the proposed area. (See this Consultation Report with Commonwealth and State Fisheries.)		

- On 3 February 2023, Woodside emailed AFMA with an update on the proposed activity (Appendix F, reference 1.148) and provided an updated Consultation Information Sheet and fisheries maps.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.162).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
AFMA provided feedback stating: ● They were unable to comment on individual proposals but Woodside should consult with all fishers with entitlements within the proposed area. ● This could be done via relevant fishing industry associations; contacts were provided.	Woodside has provided information to relevant fishery licence holders as well as representative organisations on behalf of Commonwealth fishery licence holders who have entitlements to fish within the proposed area. (See this Consultation Report with Commonwealth and State Fisheries.) Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF - Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced in **PS 2.4.1** in this EP. No additional measures or controls are required.

Australian Hydrographic Office (AHO)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed the AHO advising of the proposed activity (Appendix F, reference 1.5) and provided a Consultation Information Sheet, Consultation FAQ and shipping lanes map (Appendix F, reference 1.6).
- On 23 September 2022, AHO emailed Woodside and acknowledged receipt of Woodside's consultation email.
- On 27 January 2023, Woodside emailed AHO with an update on the proposed activity (Appendix F, reference 1.123) and provided an updated Consultation Information Sheet. Woodside confirmed it would make available a shipping lane map as soon as possible.
- On 30 January 2023, AHO emailed Woodside and acknowledged receipt of Woodside's consultation email.
- On 28 February 2023, Woodside emailed AHO and provided an updated shipping lane map (Appendix F, reference 1.201).

- On 1 March 2023, AHO emailed Woodside and acknowledged receipt of Woodside's consultation email.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
AHO has acknowledged receipt of Woodside's consultation emails. No feedback, objections or claims received despite follow up.	AHO has acknowledged receipt of Woodside's consultation emails. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside will notify the AHO no less than four working weeks before operations commence, as referenced as **PS 2.3.1** in this EP. No additional measures or controls are required.

Australian Maritime Safety Authority (AMSA) – Marine Safety

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed AMSA advising of the proposed activity (Appendix F, reference 1.5) and provided a Consultation Information Sheet, Consultation FAQ and shipping lanes map (Appendix F, reference 1.6).
- On 13 October 2022 Woodside sent a follow up email (Appendix F, reference 1.66).
- On 27 January 2023, Woodside emailed AMSA with an update on the proposed activity (reference 1.123) and provided an updated Consultation Information Sheet. Woodside confirmed it would make available a shipping lane map as soon as possible.
- On 31 January 2023, AMSA emailed Woodside:
  - AMSA requested information on how high in the water column the moorings actually are and whether they could obstruct shipping traffic.
  - AMSA requested Woodside to confirm its current GIS data so that AMSA can map it and assess navigation safety.
  - AMSA requested Woodside to send its updated Shipping Lane figures.
  - AMSA provided details around notifications and contact details.
- On 10 February 2023, AMSA emailed Woodside and reiterated its 31 January 2023 request for additional information.
- On 15 February 2023, AMSA emailed Woodside and reiterated its 31 January 2023 request for additional information.
- On 16 February 2023, Woodside received a phone message from AMSA requesting digital data regarding the proposed activity.
- On 17 February 2023, Woodside had a phone conversation with AMSA to clarify the data required and was advised that AMSA would like the operational area polygons in shapefile format for the proposed activity.
- On 17 February 2023, Woodside emailed AMSA the operational area polygons in shapefile format for the proposed activity.
- On 21 February 2023, AMSA emailed Woodside:
  - AMSA provided a vessel traffic plot showing AIS data and an updated vessel traffic plot for the Scarborough area of interest.
  - AMSA reiterated its 31 January 2023 request for additional information.

- On 28 February 2023, Woodside emailed AMSA:
  - Woodside advised that the intention is that moorings for the Floating Production Unit (FPU) will be installed prior to FPU arrival within the Operational Area under the Subsea EP, in water depths of approximately 900-1000m. Each of the 20 moorings legs will be composed of both wire and chain components and extend approximately 1650m from the FPU, connected to a suction pile anchor. The suction piles are ~24 m high by ~8 m diameter, which will be buried with only the top exposed above the seabed (i.e. once installed ~23 m will be buried, with ~ 1-2m remain protruding above the seabed).
  - Woodside noted that the Scarborough moorings depicted on AMSA's "Scabrorugh_joint_venture-2023.pdf" are not a component of the Scarborough EPs which are the subject of ongoing consultation. These appear to be metocean moorings that have since been recovered.
  - Woodside provided an updated shipping lane map.
- On 3 March 2023, AMSA emailed Woodside:
  - AMSA requested clarification on the vessel traffic plots provided and how the Environment that May Be Affected (EMBA) areas will actually be affected by working vessels, support craft and associated activities. AMSA commented that the EMBAs are quite large unique areas so AMSA is curious about the extent of vessel traffic and activity within these areas and lines of traffic and charted shipping fairways.
- On 8 March 2023, Woodside emailed AMSA (Appendix F, reference 1.203):
  - Woodside advised that the EMBA is the largest spatial extent where the Petroleum Activities Program could potentially have an environmental consequence (direct or indirect impact). The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this Environment Plan (EP) is determined by a highly unlikely release of marine diesel to the environment as a result of vessel collision. The EMBA does not represent the extent of predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release. This means in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
AMSA has provided feedback and requested further information relating to: ● Moorings for the Floating Production Unit (FPU) and whether they could obstruct shipping traffic. ● GIS data ● Clarification on how the EMBA will affect vessel traffic. ● AMSA provided details around notifications and contact details.	Woodside has addressed AMSA's requests and provided additional information, including: ● providing the operational area polygons in shapefile format for the proposed activity. ● advised that the intention is that moorings for FPU will be installed prior to FPU arrival within the Operational Area under the Subsea EP, in water depths of approximately 900-1000m and provided additional information on the moorings. ● Provided an updated shipping map. ● Explained the EMBA for the proposed activity. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it	Woodside will notify AMSA's JRCC at least 24–48 hours before operations commence, as referenced as **PS 2.5.1** in this EP. Woodside will notify AHO no less than four working weeks before operations commence, as referenced as a **PS 2.3.1** in this EP. Woodside considers the measures and controls in the EP are appropriate.

	will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

Australian Maritime Safety Authority (AMSA) – Marine Pollution

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed AMSA advising of the proposed activity (Appendix F, reference 1.7) and provided a Consultation Information Sheet and Consultation FAQ.
- On 28 September 2021, Woodside emailed AMSA and provided the Oil Pollution First Strike Plan (Appendix F, reference 1.57).
- On 27 January 2023, Woodside emailed AMSA with an update on the proposed activity (Appendix F, reference 1.122) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.161).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	Woodside has addressed oil pollution planning and response in **Appendix D.** No additional measures or controls are required.

Department of Climate Change, Energy, the Environment and Water Agriculture (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries and Biosecurity (formerly DAWE)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

Historical Engagement

- On 17 December 2021, Woodside emailed DAWE:
  - Woodside sought clarification around the Pygmy Blue Whale CMP, the Department's Guideline and NOPSEMA's FAQ in relation to the definition of, and Woodside's interpretation of BIAs.
  - Woodside requested clarification of its understanding of the documents on the DAWE website, (Blue Whale CMP) which state that "BIAs are not defined under the EPBC Act, but they are areas that are particularly important for the conservation of protected species and where aggregations of individuals display biologically important behaviour such as calving, foraging, resting or migration. BIAs have been identified using expert scientific knowledge about species' distribution abundance and behaviour".

- Woodside clarified that consequently, distribution in itself, is not a BIA (for blue whales); whereas areas where biologically important behaviour such as calving, foraging, resting or migration clearly are BIAs.

- On 20 December 2021, DAWE emailed Woodside:
  - DAWE advised that the definition provided is the agreed working definition of BIAs and this interpretation is correct, BIAs are not defined or described under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). They are however a geospatial tool used to inform regulatory decision-making given the biologically critical behaviours that they represent.
  - DAWE advised that the assumption is correct, that the entire distribution of the blue whale is not considered a BIA. The 'distribution BIA' for the blue whale, as designated in the National Conservation Values Atlas (NCVA) does not constitute a BIA (that represents an area where biologically important behaviour is displayed, such as foraging and migration for the blue whale). DAWE believe the distribution BIA was included in the NCVA following development of the Conservation Management Plan for the Blue Whale (CMP) to flag the importance of their range.
  - DAWE noted that the Blue Whale CMP states (on page 28) "it is not currently possible to define habitat critical to the survival of blue whales. Due to DAWE's limited knowledge about the distribution and abundance of these subspecies, little is currently known about the location and characteristics of these habitats. To date, the best information relates to biologically important areas where foraging occurs. These foraging areas can be considered important to the survival of blue whales as they seasonally support highly productive ecosystem processes on which significant aggregations of whales rely."
  - DAWE advised that the Blue Whale CMP provides an indicative map of 'Pygmy blue whale distribution around Australia' which shows annual high use, known and possible foraging areas. The Blue Whale CMP also provides an indicative map of known and likely migration routes. DAWE advised that these maps may be of use.

Ensuring Sufficient Information and Sufficient Time

- On 30 March 2022, Woodside emailed DCCEEW to ensure DCCEEW was aware NOPSEMA had requested correspondence between DCCEEW and Woodside which must be complied with regarding blue whale distribution and BIAs. Woodside advised details of the correspondence would be included for NOPSEMA's assessment of this EP.
- On 30 March 2022, DCCEEW thanked Woodside for the advice and that DCCEEW had been in contact with NOPSEMA and were aware of this requirement.
- On 21 September 2022, Woodside emailed DCCEEW / DAFF - Fisheries advising of the proposed activity (Appendix F, reference 1.13) and provided a Consultation Information Sheet, Consultation FAQ and fisheries map (Appendix F reference 1.14).
- On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.71).
- On 3 February 2023, Woodside emailed DCCEEW / DAFF - Fisheries with an update on the proposed activity (Appendix F, reference 1.124) and provided an updated Consultation Information Sheet, fisheries maps and Commonwealth shipwrecks information.
- On 22 February 2023, Woodside sent a follow up email (reference 1.177).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
In the course of preparing this and other Woodside EPs, DCCEEW has provided clarification around the Pygmy Blue Whale CMP, the	Woodside notes DCCEEW clarification around the Pygmy Blue Whale CMP, the Department's Guideline and NOPSEMA's FAQ in relation to the definition of BIAs.	The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned

Department's Guideline and NOPSEMA's FAQ in relation to the definition of, and Woodside's interpretation of BIAs. Whilst feedback has been received, there were no objections or claims.	Woodside's interpretation of the Pygmy Blue Whale advice has been applied in the EP, see Section 4.6.3. Woodside has provided consultation information to CFA, AFMA, DAFF – Fisheries ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	activities (**Section 4.8**). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in **Section 6.8.2** and **Section 6.8.3**. The Environment Plan demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts to the values of any underwater heritage or shipwrecks as a result of planned activities (**Section 4.9.1**). While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in **Section 6.8.2** and **Section 6.8.3**. Pygmy Blue Whale advice applied in the EP, see **Section 4.6.3.** Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. Woodside has addressed maritime biosecurity issues in **Section 6** of this EP based on previous offshore activities. No additional measures or controls are required.

Department of Defence (DoD)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed DoD advising of the proposed activity (Appendix F, reference 1.9) and provided a Consultation Information Sheet, Consultation FAQ and defence map (Appendix F, reference 1.10).
- On 13 October 2022, DoD emailed Woodside:
  - DoD advised that the activity area is located within the North Australia Exercise Area (NAXA) and restricted airspace and unexploded ordinance (UXO) may be present on and in the sea floor within the NAXA. All activities in the area are conducted at Woodside's own risk.

- DoD advised that the Commonwealth of Australia, represented by the Department of Defence, takes no responsibility for:
  - Reporting the location and type of UXO that may be in the areas.
  - Identifying or removing any UXO from these areas.
  - Any loss or damage suffered or incurred by Woodside Energy or any third party arising out of, or directly related to, UXO in the area.
  - DoD require the following notifications:
  - DoD - five weeks prior to the commencement of activities.
  - Airservices Australia (if Notice to Airmen notification is required for activities in Restricted Airspace).
  - AHO - three weeks prior to the commencement of activities.
- On 3 November 2022, Woodside emailed DoD:
  - Woodside noted the contacts provided and the advice regarding risks and notification requirements. Woodside confirmed it will notify the Department of Defence at least five weeks prior to the commencement of activities.
  - Woodside advised it will confirm restricted air space status with the Department of Defence as part of its commencement of activity notification.
  - Woodside advise that at its request, AHO will be notified four weeks prior to the start of activities.
- On 27 January 2023, Woodside emailed DoD with an update on the proposed activity (Appendix F, reference 1.125) and provided an updated Consultation Information Sheet.
- On 20 February 2023, DoD emailed Woodside:
  - DoD reiterated its previous advice provided.
  - DoD provided Woodside with a figure outlining its restricted airspace and Defence Training Areas off the WA Coast.
- On 13 March 2023, Woodside emailed DoD and provided an updated defence zone map (Appendix F, reference 1.206).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
DoD has provided feedback relating to: ● the location of the activity in proximity to the NAXA and the potential presence of UXO. ● Notification requirements. DoD has provided advice relating to: ● Details of its restricted airspace and Defence Training Areas off the WA Coast.	Woodside has reviewed the proposed activity and the location of the NAXA and UXOs to understand the potential for UXOs to be within the Operational Area. The Learmonth Air Weapons Range (AWR) practice area is within the Consultation Area and approximately 20 km south of the operational area and the location of any UXOs (known to occur) are near Bessieres Island which is located 190 km from the Operational Area. Based on the locations of the proposed activity and potential UXOs it was determined that there is no credible risk from UXOs for the proposed activity. Woodside acknowledges the potential presence of UXOs and has considered this in its risk assessment planning.	Woodside has addressed DoD's expectations on notifications – Defence, restricted air space and AHO (**PS 2.3.1** and **PS 2.7.1, Table 7-5**). AHO have been consulted on the activity and are included in Woodside's activity notification protocols. AHO will be notified four weeks prior to the start of activities. Woodside considers the measures and controls in the EP are appropriate.

	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

Department of Primary Industries and Regional Development (DPIRD)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed DPIRD (Appendix F, reference 1.15) advising of the proposed activity and provided a Consultation Information Sheet, Consultation FAQ and fisheries map.
- On 13 October 2022 Woodside sent a follow up email (Appendix F, reference 1.75).
- On 3 February 2023, Woodside emailed DPIRD with an update on the proposed activity (Appendix F, reference 1.143) and provided an updated Consultation Information Sheet and state fisheries maps.
- On 17 February 2023, DPIRD emailed Woodside:
  - DPIRD advised that as the activity is proposed for waters unlikely to influence fishing activities it has no further comments at this time.
- On 24 February 2023, Woodside emailed DPIRD:
  - Woodside confirmed it has consulted state commercial fishery licence holders and recreational fishery licence holders that are active within the EMBA for the proposed activity.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
DPIRD has provided feedback that the activity is proposed for waters unlikely to influence fishing activities and it has no further comments at this time. Whilst feedback has been received, there were no objections or claims.	Woodside confirmed with DPIRD it has consulted state commercial fishery licence holders and recreational fishery licence holders that are active within the EMBA for the proposed activity. (See this Consultation Report with Commonwealth and State Fisheries.) Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside	Woodside has assessed the relevancy of State fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF - Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

	will apply its Management of Change and Revision process (see **Section 7.6**).	
Department of Transport (DoT)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed DoT advising of the proposed activity (Appendix F, reference 1.17) and provided a Consultation Information Sheet and Consultation FAQ. ● On 28 September 2022, Woodside emailed DoT and provided a copy of the First Strike Plan (Appendix F, reference 1.56). ● On 24 October 2022, DoT emailed Woodside to advise that they had no queries and requested that Woodside provide them with a final accepted version when available. ● On 27 January 2023, Woodside emailed DoT with an update on the proposed activity (Appendix F, reference 1.122) and provided an updated Consultation Information Sheet. ● On 7 February 2023, DoT emailed Woodside to request that if there is any risk of a spill impacting State waters from any of the proposed activities, Woodside must consult DoT (Marine Oil Pollution). ● On 22 February 2023, Woodside emailed DoT to confirm that if there is a risk of a spill impacting State waters, the Department of Transport (Marine Oil Pollution) will be consulted.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
DoT has provided feedback relating to: ● The draft Oil Pollution First Strike Plan and a request for a final accepted version of the plan when available. ● Consultation requirements in the event of a spill impacting State waters from any of the proposed activities. Whilst feedback has been received, there were no objections or claims.	Woodside has confirmed that if there is a risk of a spill impacting State waters, the Department of Transport (Marine Oil Pollution) will be consulted. Woodside will send DoT a copy of the First Strike Plan once accepted. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside will provide DoT with a copy of the accepted Oil Pollution First Strike Plan, as referenced in the OSPRMA (**Appendix D**). Woodside will consult DoT if there is a spill impacting State water from the proposed activity, as referenced in the OSPRMA (**Appendix D**). No additional measures or controls are required.
Department of Planning, Lands and Heritage (DPLH)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.		

Summary of information provided and record of consultation:

- On 1 February 2023, Woodside emailed DPLH advising of the proposed activity (Appendix F, reference 1.136) and provided a Consultation Information Sheet and information on State waters shipwrecks information (Appendix F, reference 1.138).
- On 17 February 2023, DPLH emailed Woodside to advise that a Heritage Officer will be in contact regarding this referral.
- On 22 February 2022, Woodside sent a follow up email (Appendix F, reference 1.181).
- On 28 February 2023, DPLH confirmed that it was still finalising comments, to be provided as soon as possible.
- On 1 March 2023, Woodside responded and thanked DPLH for the update.
- On 3 May 2023, Woodside sent an email to DPLH noting its previous advice that it was finalising comments on the proposed activities and requested any feedback (Appendix F, Reference 1.213).
- On 9 May 2023, Woodside sent an email to DPLH regarding this EP and followed up on feedback with respect to the proposed activities.
- On 9 May 2023, DPLH responded to advise no adverse heritage impacts to any place entered into the State Register of Heritage Places had been identified. It further stated the Western Australian Museum is the delegated authority for management of Commonwealth historic shipwrecks and relics in Western Australia and should be contacted for advice regarding any maritime archaeological impacts.
- On 9 May 2023, Woodside emailed to thank DPLH for confirmation regarding heritage impacts and that Woodside would contact the Western Australian Museum for advice regarding any maritime archaeological impacts in the event that any impacts occurred.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
DPLH advised no adverse heritage impacts to any place entered into the State Register of Heritage Places had been identified and that the Western Australian Museum is the delegated authority for management of Commonwealth historic shipwrecks and relics in Western Australia and should be contacted for advice in the event of any maritime archaeological impacts. Whilst feedback has been received, there were no objections or claims.	Woodside confirmed it would contact the Western Australian Museum for advice regarding any maritime archaeological impacts in the event that any impacts occurred. Woodside consulted the Western Australian Museum for the proposed activities (see Consultation Report below). Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	The Environment Plan demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts to the values of any underwater heritage or shipwrecks as a result of planned activities (**Section 4.9.1**). While impacts to underwater heritage sites or shipwrecks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in **Section 6.8.2** and **Section 6.8.3**. No additional measures or controls are required.

Commonwealth and WA State Government Departments or Agencies – Environment

Director of National Parks (DNP)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed DNP advising of the proposed activity (Appendix F, reference 1.12) and provided a Consultation Information Sheet and Consultation FAQ
- On 13 October 2022 Woodside sent a follow up email (Appendix F, reference 1.73).
- On 2 December 2022, DNP emailed Woodside and noted that the planned activities do not overlap any Australian Marine Parks. Therefore, there are no authorisation requirements from the DNP.
  - DNP requested Woodside ensures that the EP:
    - identifies and manages all impacts and risks on Australian marine park values (including ecosystem values) to an acceptable level and has considered all options to avoid or reduce them to ALARP.
  - clearly demonstrates that the activity will not be inconsistent with the management plan.
  - DNP provided reference information on the North-west Marine Parks Management Plan 2018 Network. DNP confirm it does to require further notification of progress made in relation to this activity unless details regarding the activity change and result in an overlap with or new impact to a marine park, or for emergency responses.
  - DNP provided instructions on emergency response notifications and advised that notifications should include:
    - titleholder details
    - time and location of the incident (including name of marine park likely to be affected)
    - proposed response arrangements as per the Oil Pollution Emergency Plan (e.g. dispersant, containment, etc.)
    - confirmation of providing access to relevant monitoring and evaluation reports when available; and
    - contact details for the response coordinator.
- On 27 January 2023, Woodside emailed DNP with an update on the proposed activity (Appendix F, reference 1.122) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside emailed DNP with a reminder that the consultation period is closing soon (Appendix F, Reference 1.161)
- On 24 February 2023, DNP emailed Woodside:
  - DNP advised they have no further comment or objections and claims on the proposed activity.
  - DNP noted that comments on the proposed activity were previously provided to Woodside on 2 December 2022.
  - DNP requested clarification on the operational area (OA). The Director of National Parks considers the OA to encompass operational activities such as line turns / repositioning, equipment maintenance, deployment and recovery, crew change and resupply. These are offshore petroleum activities and Commonwealth environment regulatory matters and, as such, should be included in the EP so relevant risks are assessed and effective mitigation applied.
- On 8 March 2023, Woodside emailed DNP:
  - Woodside acknowledged the comments already provided by DNP previously on each of the relevant EPs and that DNP has no further comment or objections and claims.
  - Woodside advised that copies of DNP's previous responses have been received and have been addressed where relevant within each of the proposed EPs.
  - Woodside advised that for the purposes of this EP, the following Operational Area will apply:

- For the gravimetry activities, the Operational Area encompasses a radius of 1000 m around location of the outermost concrete pads, in which gravimetry preparation and survey activities will take place and will be managed under this EP. The 1000 m (radius) Operational Area around subsea installation allows for the movement and positioning of vessels.
- For the subsea installation activities, the Operational Area encompasses a radius of 1500 m around location of subsea infrastructure, in which subsea installation activities will take place and will be managed under this EP. The 1500 m (radii) Operational Area around subsea installation allows for the movement and positioning of vessels.
- For the mooring pre-lay activities, the Operational Area encompasses a radius of 2000 m around future location of FPU, in which mooring pre-lay activities will take place and will be managed under this EP. The 2000 m (radius) Operational Area around future FPU location allows for moorings to be deployed and the movement and positioning of vessels.

- On 19 March 2023, Woodside emailed DNP seeking a copy of DNP's feedback for the Scarborough Subsea EP on 2 December 2022.
- On 5 April 2023, DNP resent DNP's email dated 2 December 2022.
- On 5 May 2023, Woodside thanked DNP in an email for resending DNP's email of 2 December 2022. Woodside noted DNP's confirmation that planned activities do not overlap any Australian Marine Parks (AMPs); that there are no authorisation requirements from the DNP, and that there are no claims or objections at this time. Woodside stated it would contact DNP if there were any changes to the activity in the future which could result in an overlap with or new impact to a marine park, or for emergency responses.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
DNP has provided feedback, including: ● DNP noted that that the planned activities do not overlap any Australian Marine Parks. Therefore, there are no authorisation requirements from the DNP. ● DNP requested Woodside ensures that the EP: – identifies and manages all impacts and risks on Australian marine park values (including ecosystem values) to an acceptable level and has considered all options to avoid or reduce them to ALARP.	Woodside has addressed the DNP's feedback, including: ● acknowledging the comments already provided by DNP previously on each of the relevant EPs and that DNP has no further comment or objections and claims. ● advised that copies of DNP's previous responses have been received and have been addressed where relevant within each of the proposed EPs. ● provided additional information on the operational area. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned activities (**Section 4.8**). While impacts to Commonwealth Marine Parks are possible in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in **Section 6.8.2** and **Section 6.8.3**. This 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 (**Section 6.10**). Woodside will ensure DNP is made aware of any incidences within a marine park for the activity, as per

– clearly demonstrates that the activity will not be inconsistent with the management plan. ● provided instructions on emergency response notifications. ● advised it had no further comment or objections and claims on the proposed activity. ● requested clarification on the operational area.		the commitment in the Oil Pollution First Strike Plan (**Appendix H**). No additional measures or controls are required.
Department of Biodiversity, Conservation and Attractions (DBCA)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed DBCA advising of the proposed activity (Appendix F, reference 1.20) and provided a Consultation Information Sheet and Consultation FAQ. ● On 6 October 2022, DBCA emailed Woodside advising that based on the documentation provided for review and other readily available information, DBCA has no comments in relation to its responsibilities under the Conservation and Land Management Act 1984 and Biodiversity Conservation Act 2016. ● On 31 October 2022, Woodside emailed DBCA and noted that it has no comments on the proposed activities. ● On 27 January 2023, Woodside emailed DBCA with an update on the proposed activity (Appendix F, reference 1.122) and provided an updated Consultation Information Sheet. ● On 8 February 2023, DBCA emailed Woodside to advise that based on the documentation provided for review and other readily available information, DBCA has no comments in relation to its responsibilities under the Conservation and Land Management Act 1984 and Biodiversity Conservation Act 2016.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
DBCA has advised it has no comments on the proposed activity. Whilst feedback has been received, there were no objections or claims.	Woodside acknowledges that DBCA had no comment on the proposed activities. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed State Marine Park and identifies that there are no credible impacts to the values of any State Marine Parks as a result of planned activities (**Section 4.8**). While impacts to State Marine Parks are not expected 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 6.8.2** and **Section 6.8.3**. No additional measures or controls are required.

Commonwealth and State Government Departments or Agencies – Industry		
Department of Industry, Science and Resources (DISR) (formerly DISER)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed DISER advising of the proposed activity (Appendix F, reference 1.11) and provided a consultation Information Sheet and Consultation FAQ. ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.72). ● On 27 January 2023, Woodside emailed DISR with an update on the proposed activity (Appendix F, reference 1.122) and provided an updated Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.161).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
Department of Mines, Industry Regulation and Safety (DMIRS)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed DMIRS advising of the proposed activity (Appendix F, reference 1.16) and provided a consultation Information Sheet and Consultation FAQ. ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.74). ● On 27 January 2023, Woodside emailed DMIRS with an update on the proposed activity (Appendix F, reference 1.122) and provided an updated Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.161).		

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	Woodside will provide notifications to DMIRS prior to the commencement and at the end of the activity, as referenced at **Section 7.8.2.2** in this EP. No additional measures or controls are required.
Commonwealth Commercial fisheries and representative bodies		
Western Deepwater Trawl Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed licence holders advising of the proposed activity (Appendix F, reference 1.48) and provided a Consultation Information Sheet, Consultation FAQ and fisheries map. ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.69). ● On 3 February 2023, Woodside emailed licence holders with an update on the proposed activity (Appendix F, reference 1.139) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.171).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

North West Slope and Trawl Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside emailed licence holders on the proposed activity (Appendix F, reference 1.139) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.171).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

Western Tuna and Billfish Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside emailed licence holders on the proposed activity (Appendix F, reference 1.140) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.183).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery

	will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

Commonwealth Fisheries Association (CFA)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed CFA advising of the proposed activity (Appendix F, reference 1.24) and provided a Consultation Information Sheet, Consultation FAQ and fisheries map
- On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.79).
- On 3 February 2023, Woodside emailed CFA with an update on the proposed activity (Appendix F, reference 1.139) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.171).
- On 22 February 2023, CFA emailed Woodside:
  - CFA advised that it is not resourced to give feedback on Woodside's Environment Plan. CFA requested to direct enquiries to the associations that represent the directly affected fisheries/fishers.
  - CFA noted that the increasing volume of requests for consultation on EP from oil and gas and more recently windfarm proposals are beyond the capacity of most associations. For this reason please be prepared to engage those associations on a fee for service basis.
- On 15 March 2023, Woodside emailed CFA:
  - Woodside confirmed it has provided consultation information directly to fishery licence holders that it has assessed as 'relevant persons' for the proposed EP, as well as to their fishery representative bodies.
  - As per Woodside's ongoing consultation approach, feedback continues to be assessed and responded to, as required, through the life of an EP.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
CFA has advised it is unable to provide feedback and that Woodside should consult with fishery licence holders directly. Whilst feedback has been received, there were no objections or claims.	Woodside has addressed the CFA's feedback, including confirming it has provided consultation information directly to licence holders it has assessed as 'relevant persons' for the proposed EP as well as their fishery representative bodies. Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia and individual relevant licence holders.	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area

	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

Tuna Australia

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed Tuna Australia advising of the proposed activity (Appendix F, reference 1.30) and provided a Consultation Information Sheet, FAQ and fisheries map.
- On 22 September 2022, Tuna Australia emailed Woodside and provided Woodside with a service agreement template for a working relationship with Tuna Australia to assist Woodside with consultation with its sector when developing submissions.
- On 3 February 2023, Woodside emailed Tuna Australia with an update on the proposed activity (Appendix F, reference 1.139) and provided an updated Consultation Information Sheet and fisheries map.
- On 15 March 2023, Woodside emailed Tuna Australia:
  - Woodside advised that the level of feedback provided by an organisation, if any, is at the person or organisation's discretion.
  - Woodside advised it would be happy to meet with Tuna Australia to provide an overview of the proposed activities, how Woodside develops its EPs and the extensive controls Woodside has in place to reduce impacts to as low as reasonable practical (ALARP) and acceptable level. Woodside advised that the aim is to provide an efficient and simple way to obtain feedback and to assist in an understanding of Woodside's activities.
  - Woodside advised that as per Woodside's ongoing consultation approach, feedback continues to be assessed and responded to, as required, through the life of an EP.
- On 15 March 2023, Tuna Australia emailed Woodside and attached what it described as 'an industry position statement for engaging with energy companies seeking consultation advice from stakeholders on environmental plans and project proposals'. This included:
  - An overview of Tuna Australia's functions, interests and activities as well as the organisation's company objectives.
  - The geographic areas that Tuna Australia represents by membership Statutory Fishing Rights.
  - A recommendation that project proponents also engage with the Australian Southern Bluefin Tuna Industry Association for any proposals in the Southern Bluefin Tuna fishing area.
  - The position that Tuna Australia considers itself a 'relevant person' consistent with NOPSEMA guidelines.
  - A request that Tuna Australia be contacted when any proposed activity has the potential to impact vessel navigation, fishing activities, and/or the conservation of fish resources consistent with the Offshore Petroleum and Greenhouse Gas Storage Act 2006.
  - A request for a map from proponents of the proposed activity to determine if its member interests may be affected on a case-by-case basis.

  - A request that where potential effects exist, there is a need for a service agreement. Tuna Australia advised it can no longer coordinate consultation with offshore energy activities on behalf of Tuna Australia's members without a service agreement in place. Tuna Australia requests proponents execute Tuna Australia's services agreement and provide information in a written succinct manner including estimated boundaries for extent of planned activity impacts (i.e. artificial light, noise, discharges etc) as well as activities within the operational area. This advice will be distributed to members and non-members holding SFRs in the Eastern (114 concession holders) and Western (61 concession holders) Tuna and Billfish Fisheries for comment. Information provided would be relevant to tuna and billfish fisheries in the area that may affect vessel navigation, fishing activities, and/or the conservation of fish resources based on the planned aspects of the activity, and proposed control measures to manage impacts.
  - Tuna Australia noted that it wishes to engage constructively with project proponents for all situations where there is potential for conflict with vessel navigation, access to fishing area and/or gear, and the biology of target fish and baitfish. Advice provided can change annually due to the dynamic nature of its fisheries.
  - Tuna Australia encouraged companies requiring advice from its sector to enter into a consultation services agreement with Tuna Australia to support their applications. Noting that Tuna Australia may be able to provide information on vessel navigation, fishing activities and/or the conservation of fish resources that may be affected that is not publicly available and will be an important input to environmental impact and risk assessment processes.
- On 17 May 2023, Woodside emailed Tuna Australia thanking it for its position statement and:
  - Noted the level of feedback provided by an organisation, if any, is at the person or organisation's discretion.
  - Woodside stated it does not have an expectation that organisations provide a report or engage a consultant for consultation or provide feedback on their behalf.
  - Woodside stated it is open to suggestions from Tuna Australia as to ways to improve efficiency and simplicity for feedback so that the process is manageable.
  - Woodside reiterated it would be happy to meet with Tuna Australia to provide an overview of our proposed activities, how we develop our environment plans and the extensive controls we have in place to reduce impacts to as low as reasonably practical (ALARP) and acceptable level.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
Tuna Australia has responded providing a position statement that outlines a request for how it would like to be consulted on EP activities. The position statement requests that where there is the potential for the proposed activity to impact Tuna Australia's functions, interests or activities or that of its members, there is a need for a service agreement to be executed.	The fishery management area for the Western Tuna and Billfish Fishery, which Tuna Australia represents, overlaps both the Operational Area and EMBA. However, there is considered to be no potential for interaction within these areas as: ● No fishing effort has occurred within or nearby to the Operational Area, with the nearest fishing effort occurring ~60 km away. ● Fishery Status Report 2022 indicates current fishing effort is concentrated between Carnarvon and Albany, and occurred within the EMBA in the last five years (2016–2021) (Patterson et al., 2022). However, given the distance from the Operational Area (>60 km) where this event may occur, the type of hydrocarbon (with up to 35% evaporating within the first 24 hours) and duration of exposure, no significant impact from a marine diesel spill is predicted. Woodside acknowledges previous feedback received from Tuna Australia with respect to separate EPs. Woodside confirms that it conducts impact and risk assessments for its activities to identify and manage environmental impacts and risks, which includes potential interaction with recreational and commercial fishers. To manage potential interactions, Woodside has the following controls in place with regard to the PAP of the Subsea EP: ● Vessels adhere to regulatory requirements for navigational safety. ● Notification to AHO of activities and movements to allow generation of navigation warnings (Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) (including AUSCOAST warnings where relevant)). ● Establishment of temporary exclusion zones by relevant vessels which are communicated to marine users. ● Vessels comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements. Woodside also notes the following in relation to the points raised in Tuna Australia's feedback: ● Routine marine vessel discharges will be managed in accordance with legislative and regulatory requirements (e.g. marine orders)	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside has adopted the following controls to manage potential interactions with commercial fisheries: ● **PS 2.1.1** – vessels will comply with the Navigation Act and Marine Order 21 ● **PS 2.3.1** – notifications to AHS to allow generation of navigation warnings and Notice to Mariners ● **PS 2.2.1** – establishment of temporary exclusion zones ● **PS 2.3.1** – AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity Woodside has also adopted the following controls to manage the points raised in Tuna Australia's Feedback ● **PS 7.1.1** and **7.2.1** vessels will comply with Marine orders 95 and 96 ● **PS 7.4.1** chemicals will be approved through the Woodside chemical assessment process ● **PS 1.2.1** infrastructure will be placed in the planned locations ● **PS 3.1.1** vessel will comply with EPBC Regulations 2000 – Part 8 Division 8.1 Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Tuna Australia's functions, interests or activities. No additional measures or controls are required.

	● Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints. Pre-commissioning procedures developed and followed so that appropriate chemical concentrations are maintained. ● Seabed disturbance will managed by ensuring infrastructure is placed on the seabed within the predefined design footprint using positioning technology to limit seabed disturbance. Further, ROV inspection will be undertaken post-installation to confirm installation aids have been removed. ● Acoustic emissions from vessels in field will be managed by complying with regulatory requirements (e.g. EPBC Regulations 2000 – Part 8 Division 8.1). Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

State Commercial fisheries and representative bodies		
Marine Aquarium Managed Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.144) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023 Woodside sent a follow up letter (Appendix F, reference 1.169).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.
Mackerel Managed Fishery (Area 2 and 3)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.142) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023 Woodside sent a follow up letter (Appendix F, reference 1.167).		

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.
West Coast Deep Sea Crustacean Managed Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.142) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023 Woodside sent a follow up letter (Appendix F, reference 1.167).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

Specimen Shell Managed Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 6 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.154) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 1.186).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.
Onslow Prawn Managed Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 6 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.154) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 1.186).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders.	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP.

	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.
Nickol Bay Prawn Managed Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 6 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.154) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 1.186).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.
Western Australian Sea Cucumber Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 6 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.154) and provided an updated Consultation Information Sheet and fisheries map.		

- On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 1.186).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

Gascoyne Demersal Scalefish Fishery

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 6 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.154) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 1.186).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area

	will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.
Pilbara Trawl Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.141) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 1.184).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.
Pilbara Trap Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside sent a letter to licence holders on the proposed activity (Appendix F, reference 1.141) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.184).		

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.
Pilbara Line Fishery		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside emailed licence holders on the proposed activity (Appendix F, reference 1.149) and provided an updated Consultation Information Sheet and fisheries map. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.166).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

Western Australian Fishing Industry Council (WAFIC)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed WAFIC advising of the proposed activity (Appendix F, reference 1.25) and provided a Consultation Information Sheet, Consultation FAQ and fisheries map.
- On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.83).
- On 3 February 2023, Woodside emailed WAFIC with an update on the proposed activity (Appendix F, reference 1.144) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.163).
- On 5 May 2023, Woodside had a phone call with WAFIC to follow up on a number of EPs, including the activities proposed under this EP, and to request any further feedback. Woodside committed to providing WAFIC with a consolidated email outlining all the EPs Woodside is currently consulting WAFIC on for ease of feedback.
- On 5 May 2023, Woodside sent an email to WAFIC providing the status of feedback on a number of EPs, including the activities proposed under this EP. Woodside advised it would soon be submitting the EP for assessment and requested any feedback.
- On 19 May 2023, Woodside had a phone call with WAFIC to follow up on a number of EPs, including the activities proposed under this EP and to request any feedback

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
WAFIC requested a consolidated email outlining the status of a number of EPs including the activities proposed under this EP. Whilst feedback has been received, there were no objections or claims.	Woodside provided WAFIC with the status of feedback on a number of EPs, including this EP, and advised it would be submitting the EP for assessment and requested any feedback. Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on WAFIC's functions, interests or activities. No additional measures or controls are required.

Recreational marine users and representative bodies		
Karratha Recreational Marine Users		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside emailed Karratha Recreational Marine Users on the proposed activity (Appendix F, reference 1.145) and provided a Consultation Information Sheet. ● On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.185).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.
Exmouth Recreational Marine Users		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 3 February 2023, Woodside emailed Exmouth Recreational Marine Users on the proposed activity (Appendix F, reference 1.146) and provided a Consultation Information Sheet. ● On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.164).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.	No additional measures or controls are required.

	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	
Pilbara / Kimberley Recreational Marine Users		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 6 February 2023, Woodside emailed Pilbara / Kimberley Recreational Marine Users on the proposed activity (Appendix F, reference 1.151) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.187).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.
Gascoyne Recreational Marine Users		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 6 February 2023, Woodside sent a letter to Gascoyne Recreational Marine Users on the proposed activity (Appendix F, reference 1.150) and provided a Consultation Information Sheet. ● On 22 February 2023 Woodside sent a follow up letter (Appendix F, reference 1.168).		

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.

Recfishwest

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed Recfishwest advising of the proposed activity (Appendix F, reference 1.18) and provided a Consultation Information Sheet and Consultation FAQ (Appendix F, reference 1.46).
- On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.81).
- On 18 October 2022, Recfishwest emailed Woodside:
  - Recfishwest advised that recreational fishing is likely to be more infrequent in the proposed area and that Recfishwest does not object to the proposed activities.
  - Recfishwest requested to be kept informed on the progress of the project.
- On 31 October 2022, Woodside emailed Recfishwest and noted Recfishwest had no objections and confirmed they would keep Recfishwest informed of project updates.
- On 27 January 2023, Woodside emailed Recfishwest with an update on the proposed activity (Appendix F, reference 1.126) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.172).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
Recfishwest has provided feedback and advised that: ● Fishing is likely to be more infrequent in the proposed area	Woodside has responded to Recfishwest's feedback and has confirmed it will keep Recfishwest updated on project updates. Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.	Woodside has consulted Recfishwest in the course of preparing this EP. Woodside has assessed the claims or objections raised by Recfishwest. An additional measure was put in place. Woodside will provide notifications to

and that Recfishwest does not object to the proposed activities Recfishwest also requested to be kept informed on the progress of the project.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Recfishwest prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Recfishwest's functions, interests or activities.
Marine Tourism Association of WA		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed Marine Tourism WA advising of the proposed activity (Appendix F, reference 1.22) and provided a Consultation Information Sheet and Consultation FAQ. ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.82). ● On 27 January 2023, Woodside emailed Marine Tourism WA with an update on the proposed activity (Appendix F, reference 1.126) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.172).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.
WA Game Fishing Association (WAGFA)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed WAGFA advising of the proposed activity (Appendix F, reference 1.19) and provided a Consultation Information Sheet and Consultation FAQ.		

- On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.207).
- On 27 January 2023, Woodside emailed WAGFA with an update on the proposed activity (Appendix F, reference 1.126) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.172).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.

Titleholders and Operators

Chevron Australia / Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.8.1** and below.

Summary of consultation provided and responses:

- On 21 September 2022, Woodside emailed Chevron Australia advising of the proposed activity (Appendix F, reference 1.47) and provided a Consultation Information Sheet, Consultation FAQ and neighbouring Titleholder map.
- On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.75).
- On 27 January 2023, Woodside emailed Chevron Australia with an update on the proposed activity (Appendix F, reference 1.118) and provided a Consultation Information Sheet. Woodside requested that Chevron forward the consultation information to Chevron's Joint Venture partners Osaka Gas Gorgon, Tokyo Gas Gorgon and JERA Gorgon for feedback.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.173).
- On 22 March 2023, Chevron emailed Woodside:
  - Chevron advised it was actively reviewing a list of 10 of Woodside's EP submissions.
  - Chevron advised the current forecast is for the list to be completed by mid-April at the latest, although it has prioritised a list of five EPs to be completed sooner.
  - Chevron requested for Woodside to advise if there is a particular EP that is of higher urgency so that it can prioritise its review accordingly. Once this initial backlog is clear Chevron anticipates being in a position to respond within 30 days.

- Chevron requested to assist in its review of the potential effect on its interests and activities, could Woodside please provide GIS shape files for the EPs listed (including this proposed activity).

- On 29 March 2023, Chevron emailed Woodside:
  - Chevron advised it had reviewed five of Woodside's EPs that were submitted to Chevron and have captured initial feedback on each.
  - On the proposed activity Chevron provided a comment that no impact has been identified.
  - Chevron raised a general comment that noted if the work plan is executed during the cyclone season, Woodside is to provide cyclone anchor configuration, as well as mooring design, site specific geophysical and geotechnical data, anchor analysis, risk mitigations to inform Chevron Australia of the potential risks to its assets within the affected leases.
- On 3 April 2023, Woodside emailed Chevron:
  - Woodside provided GIS shapefiles for a list of 10 Woodside EPs, including this proposed activity.
  - Woodside advised it would respond to Chevron's feedback dated 29 March 2023 separately.
- On 6 April 2023, Woodside emailed Chevron:
  - Woodside re-attached the GIS shapefiles provided on 3 April 2023.
  - Woodside noted Chevon's feedback that no impact is identified from the proposed updated activities under the Scarborough WA-61-L & WA-62-L Subsea Infrastructure Installation EP.
  - Woodside advised the only Scarborough activity that may involve mooring is the drilling and completions scope which has an option in the Scarborough Drilling and Completions Environment Plan (D&C EP) for a moored MODU. This is contingent – base case is the use of DP MODU. The D&C operational area is ~123 km from the any of Chevron's assets (Janzs) and therefore there are no credible risks to Chevron assets.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
Chevron has provided feedback on the proposed activity noting: ● No impact identified. Chevron has requested: ● GIS shapefiles for the proposed activity. ● If the work plan is executed during the cyclone season, Woodside is to provide cyclone anchor configuration, as well as mooring design, site specific geophysical and geotechnical data, anchor analysis, risk mitigations to inform Chevron Australia of the potential	Woodside has provided GIS shapefiles and a response relating to its question regarding cyclone anchoring and advised of mooring activities relating to a separate Scarborough EP as the proposed activity under this EP does not involve mooring. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has consulted Chevron in the course of preparing this EP. Woodside has assessed the claims or objections raised by Chevron. No additional measures or controls have been put in place. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Chevron's functions, interests or activities.

risks to its assets within the affected leases.		

Exxon Mobil Australia

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Exxon Mobil Australia on the proposed activity (Appendix F, reference 1.127) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.174).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

Finder Energy

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Finder Energy on the proposed activity (Appendix F, reference 1.127) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.174).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

KUFPEC		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 27 January 2023, Woodside emailed KUFPEC on the proposed activity (Appendix F, reference 1.127) and provided a Consultation Information Sheet, Consultation FAQ and neighbouring Titleholder map. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.174).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
Western Gas		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed Western Gas advising of the proposed activity (Appendix F, reference 1.47) and provided a Consultation Information Sheet, Consultation FAQ and neighbouring Titleholder map. ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.71). ● On 27 January 2023, Woodside emailed Western Gas with an update on the proposed activity (Appendix F, reference 1.127) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.174).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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	No additional measures or controls are required.

	will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	
Shell Australia		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 27 January 2023, Woodside emailed Shell Australia with an update on the proposed activity (Appendix F, reference 1.127) and provided a Consultation Information Sheet. ● On 7 February 2023, Shell emailed Woodside and advised that it does not have any feedback on the EPs that were included in Woodside's correspondence.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
Shell has responded and advised it has no feedback on the proposed activity. Whilst feedback has been received, there were no objections of claims.	Woodside notes Shell's advice that it has no feedback on the proposed activity. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Shells' functions, interests or activities. No additional measures or controls are required.
Santos		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 27 January 2023, Woodside emailed Santos on the proposed activity (Appendix F, reference 1.127) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.174).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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	No additional measures and controls are required.

	will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

Eni Australia

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Eni Australia on the proposed activity (Appendix F, reference 1.128) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.179).
- On 22 February 2023, Eni Australia emailed Woodside to advise it has no comments and that it requested to remain updated on the proposed activity.
- On 23 February 2023, Woodside emailed Eni Australia and confirmed it will provide Eni Australia with commencement and cessation of activity notifications relating to the proposed activity.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
Eni Australia has provided feedback that it has no comment on the proposed activity. Eni Australia has requested to remain updated on the proposed activity. Whilst feedback has been received, there were no objections or claims.	Woodside notes Eni Australia's feedback that it has no comment on the proposed activity. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has consulted Eni Australia in the course of preparing this EP. Woodside has assessed the claims or objections raised by Eni Australia. An additional measure was put in place. Woodside will notify Eni Australia prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Eni Australia's functions, interests or activities.

OMV Australia / Sapura OMV Upstream (WA)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed OMV Australia / Sapura OMV Upstream (WA) on the proposed activity (Appendix F, reference 1.127) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.174).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

JX Nippon Oil & Gas Exploration Corporation

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed JX Nippon Oil & Gas Exploration Corporation on the proposed activity (Appendix F, reference 1.128) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside emailed JX Nippon Oil & Gas Exploration Corporation via its website to obtain more up to date contact details for providing the EP Consultation Information (Appendix F, reference 1.179).
- On 23 February 2023, Woodside sent a letter to JX Nippon Oil & Gas Exploration Corporation advising of the proposed activity (Appendix F, reference 1.193). Woodside also sent an email advising of the proposed activity (Appendix F, reference 1.194).
- On 24 February 2023, JX Nippon Oil & Gas Exploration Corporation emailed Woodside to confirm the location and topic of the activity so as to obtain the correct contact to provide feedback.
- On 24 February 2023, Woodside emailed JX Nippon Oil & Gas Exploration Corporation to advise on the location of the specific proposed activity. Woodside resent the consultation information.
- On 24 February 2023 JX Nippon Oil & Gas Exploration Corporation emailed Woodside and copied in the appropriate contact for reviewing the consultation information.
- On 28 February 2023, Woodside emailed JX Nippon Oil & Gas Exploration Corporation to advise it has updated its stakeholder distribution list.
- On 10 March 2023, Woodside sent a follow up email (Appendix F, reference 1.204).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

BP Developments Australia (BP)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 27 January 2023, Woodside emailed BP on the proposed activity (Appendix F, reference 1.128) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.179).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
Carnarvon Energy		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 27 January 2023, Woodside emailed Carnarvon Energy on the proposed activity (Appendix F, reference 1.128) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.179).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.

PE Wheatstone (PEW)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 27 January 2023, Woodside emailed PEW on the proposed activity (Appendix F, reference 1.128) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.179).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
Kyushu Electric Wheatstone (KEW)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 27 January 2023, Woodside emailed KEW on the proposed activity (Appendix F, reference 1.128) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.179).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.

Fugro Exploration		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 27 January 2023, Woodside emailed Fugro Exploration on the proposed activity (Appendix F, reference 1.128) and provided a Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.179).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
INPEX		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 13 March 2023, Woodside emailed INPEX on the proposed activity (Appendix F, reference 1.205) and provided a Consultation Information Sheet. ● On 3 May 2023, Woodside sent a follow up email (Appendix F, reference 1.212)		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.

Lightmark Enterprises

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Lightmark Enterprises on the proposed activity (Appendix F, reference 1.208) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.180).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 11 November 2022, Woodside emailed NERA advising of the proposed activity (Appendix F, reference 1.102) and provided a Consultation Information Sheet. Woodside noted to NERA:
  - That the Subsea EP had not yet been submitted to NOPSEMA.
  - That the proposed activity is planned to be undertaken within a subset of the activity area for the Scarborough Seismic Survey and may be of interest to NERA.
  - That the EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. The OPP includes a detailed description of activities and an assessment of impacts; with controls to develop acceptability criteria. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.
  - NERA would be kept informed of any future relevant consultation regarding the activity.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.175).
- On 24 February 2023, NERA email Woodside:
  - NERA confirmed the CSEP has no comments on the proposed activity and it has no planned activities for 2023.
  - NERA requested it would like to be kept up to date as to when these activities occur.
- On 28 February 2023, Woodside emailed and confirmed they will provide NERA with commencement and cessation of activity notifications relating to the proposed activities.

- On 1 May 2023, NERA emailed Woodside on a separate project advising the Collaborative Seismic EP had been withdrawn and will no longer go ahead. NERA requested that the CSEP be removed from relevant person consultation.
- On 2 May 2023, Woodside emailed NERA to confirm that Woodside will remove the CSEP from its relative person consultation for future EPs.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
NERA has provided feedback and advised it has no comments on the proposed activity. NERA initially requested to be kept updated with the proposed activity then later advised the CSEP was no longer going ahead and that it can be removed from consultation. Whilst feedback has been received, there were no objections or claims.	Woodside addressed NERA's feedback including confirming it would provide commencement and cessation notifications. However, after NERA later advised the CSEP was no longer proceeding and that the notification is no longer required, Woodside confirmed it would remove the CSEP from its relative person consultation for future EPs. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on NERA's functions, interests or activities. No additional measures or controls are required.

Peak Industry Representative bodies

Australian Petroleum Production and Exploration Association (APPEA)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed APPEA advising of the proposed activity (Appendix F, reference 1.31) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.77).
- On 27 January 2023, Woodside emailed APPEA with an update on the proposed activity (Appendix F, reference 1.122) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.161).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

Traditional Custodians

Ngarluma Aboriginal Corporation (NAC)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 23 September 2022, Woodside emailed NAC advising of the proposed activity (Appendix F, reference 1.53) and provided a Consultation Information Sheet and Consultation FAQ inviting feedback. On 12 October 2022, Woodside sent a follow up email (Appendix F, reference 1.60).
- On 6 January 2023, Woodside left a voicemail with NAC advising Woodside is seeking to consult on Scarborough projects and requesting call back.
- On 17 January 2023, Woodside left a voicemail with NAC following up and reiterating that Woodside is seeking to consult on Scarborough projects and requesting call back to discuss NAC's preferred method of consultation.
- On 20 January 2023, Woodside emailed NAC advising of the proposed activity (Appendix F, reference 1.110) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. Woodside made clear it was prepared to consult in the manner and location preferred by NAC and resource the meeting appropriately. Woodside requested that the information be forwarded to NAC members as required.
- On 26 January 2023, Woodside and NAC representatives met to discuss the proposed activity in more detail.
- On 3 February 2023, Woodside and NAC representatives met in Roebourne to discuss how best to consult on the proposed activity.
- On 17 February 2023, Woodside spoke with NAC representatives to discuss the proposed activity and to plan further engagement on a range of Woodside EPs. NAC representatives stated there would be opportunity at the NAC March Board meeting for further engagement.
- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity and following on from the 17 February 2023 meeting (Appendix F, reference 1.198). Woodside noted it is seeking NAC's feedback as soon as possible on the proposed activity. Woodside made clear it was prepared to consult in the manner and location preferred by NAC and resource the meeting appropriately.
- On 24 February 2023, NAC emailed Woodside to acknowledge receipt of Woodside's emails and that it was yet to attend to the emails and would do so following the w/c 27 February 2023.

- On 9 March 2023, Woodside emailed NAC and left a phone message to follow up on the email received 24 February 2023:
  - Woodside advised it was seeking opportunity for Woodside to present to the NAC board with an EP overview and to ascertain whether there had been any progress in securing a preferred day and timeslot.
- On 9 March 2023, NAC emailed Woodside to advise that the contact at NAC was not available to meet on 30 March 2023.
- On 9 March 2023, Woodside emailed NAC:
  - Woodside noted that during a previous meeting, NAC had advised its next board meeting would be held on 29 and 30 March and that Woodside would be potentially assigned time on the agenda to present to the NAC Board on either one of those days.
  - Woodside advised that this is an important opportunity to ensure that NAC Board have the opportunity to provide feedback on the EPs and whether they have interests in the environment that may be affected (EMBA).
  - Woodside welcomed the suggestion of alternative days/times or ways it can provide an overview to NAC the Board.
- On 10 March 2023, NAC emailed Woodside to advise that NAC's March Board Meeting was full with overspills from January and February and at this stage will need to leave the environmental plan consultation until the April meeting.
- On 14 March 2023, Woodside emailed NAC to request the dates for the April board meeting and to confirm what time Woodside might be allocated to present at NAC's earliest convenience.
- On 14 March 2023, NAC emailed Woodside to advise that the Board meeting is tentatively set for 29th April but this needed to be confirmed with the NAC Board before a commitment on time or date could be given.
- Between 12-17 April 2023, NAC and Woodside exchanged emails with Woodside seeking confirmation of the April board date and whether Woodside would have time on the agenda.
- On 17 April 2023, Woodside emailed NAC noting there had been no confirmation of an April meeting and sought advice on whether NAC had feedback in relation to the proposed activities. The email explained Woodside's plan to submit the EP and that Woodside was seeking pre-submission feedback, noting that feedback could be provided for the life of the EP. Woodside sought an email supporting the approach and also looked forward to meeting in future.
- On 20 April 2023, NAC emailed Woodside acknowledging receipt of the materials and asked questions of an unrelated EP.
- On 21 April 2023, NAC advised there was no time for Woodside on the April agenda but time would be set aside for May, with a tentative date of 17 May 2023.
- On April 21, Woodside thanked NAC for their response.
- On 28 April 2023, Woodside emailed NAC advising that the next step is for the EP to be submitted but no feedback has been received to date. Stated that before Woodside submits, Woodside seeks to understand whether there are any issues or concerns with the proposed activities that need to be reflected in the EP.
- On 10 May 2023, NAC replied to Woodside stating that they are supportive of submission of the EP and look forward to ongoing consultation.
- On 12 May 2023, NAC emailed Woodside to notify that Woodside had been allocated a one hour window in the NAC Board Meeting on 17 May
- On 17 May 2023, Woodside presented to the NAC Board of Directors in Karratha:
  - Woodside opened the meeting with introductions
  - Woodside thanked the Ngarluma Aboriginal Corporation (NAC) for inviting Woodside Energy to speak with them and provided Acknowledgement of Country
  - Woodside talked through agenda and reasons for consultation

- Woodside introduced the regulations we need to comply with and the role of NOPSEMA. Explained that many of our activities could impact Ngarluma country in the highly unlikely event of an oil spill, and some activities like Scarborough could have a more direct impact
- Woodside referred to an example EMBA and described how it is comprised of many replicates of a single spill
- Woodside explained that we are consulting with many people up and down the coastline including multiple Aboriginal Corporations
- Woodside proposed what consultation outcomes it would like to meet with NAC, including understanding
    - How the activities could impact cultural values, functions, interests or activities
    - Whether protecting the environment is enough to protect these things
    - What NAC's concerns are about the proposed activities and what NAC thinks we should do about it
    - If there's anything NAC would like included in EPs
- Woodside noted that feedback will be welcomed throughout the life of all Environment Plans
- Woodside provided a high level overview of the Scarborough project
- NAC asked when these activities are proposed to happen, Woodside responded later this year pending government approvals
- Woodside described the Scarborough subsea installation activities, including gravimetry, flowline, umbilical and structure installation. Equipment will be left with chemically treated water inside, no hydrocarbons will be introduced at this stage
- Woodside asked if there was any further feedback or questions about these activities, none were received
- Woodside described the planned and unplanned environmental impacts and risks of the activities described in the meeting and proposed controls, in accordance with the Information Sheets
- Woodside asked whether there are any questions on the environmental risks and impacts, none were received
- Woodside noted that any questions or considerations can be directed through Shanine, or the Quarterly Heritage Meetings which NAC has a standing invite to. This is also an opportunity to discuss job opportunities and other matters

Woodside left hard copies of Information Sheets and Plain Language Summaries for each discussed activity with NAC attendees.

Quarterly Heritage Meetings:

- Woodside convenes a quarterly meeting of Traditional Custodian representatives from the Representative Aboriginal Corporations involved in historical native title claims over the Burrup Peninsula, including NAC. Individual attendees are nominated by their representative Aboriginal Corporations. These meetings are summarised separately in this table.
- NAC did not nominate attendees to quarterly meetings in 2021 or the first half of 2022 but were provided with copies of the slides used which included overviews of the Scarborough Project.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
NAC has not provided objections or claims in response to the information provided since consultation commenced in October 2022. NAC	Consultation with NAC has not identified any other groups or individuals relevant to communally held functions, activities or interests.	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on NAC's functions, interests or activities.

has confirmed receipt of materials on more than one occasion, and there has been ample opportunity for two-way dialogue. As of 10 May 2023, NAC stated they support the submission of the EP and look forward to ongoing consultation. During face-to-face engagement with the NAC board did not provide any objections, claims or feedback on the proposed activity.	No material issues or concerns related to the proposed activity were raised during consultation to date. Woodside invited further feedback in accordance with Woodside's approach to ongoing consultation (see **Section 7.6**). 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 7.6**).	Based on the engagement to date, no additional controls have been identified.

Murujuga Aboriginal Corporation (MAC)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

Historical Engagement

- Woodside has been consulting with MAC on the Scarborough project area generally since 2018, including over the area for which this EP relates. Below is evidence of the ongoing consultation.
  - 12 June 2018 - Meeting: Woodside provided a briefing on a number of projects including Scarborough.
  - 11 September 2018 - Meeting: Woodside provided a briefing on Scarborough's approvals pathway, schedule and proposed engagement approach.
  - 12 December 2018 - Meeting: Woodside provided a briefing on Scarborough's construction footprint and future engagement.
- On 25 August 2020, Woodside CEO and MAC Board met in person at the MAC office on Murujuga about a number of issues including high-level summary of Scarborough project. MAC members expressed a positive opinion of Woodside and a desire to work together in partnership to achieve future ambitions.
- On 8 October 2020 Woodside requested that MAC conduct an ethnographic survey to identify heritage values known to exist in the nearshore or offshore footprints of the Scarborough project or surrounding seascape.
- From 20-22 October 2020 members of MAC's Circle of Elders participated in an on-country ethnographic survey with both male and female heritage consultants, consistent with industry standard practice. The heritage consultants were selected by MAC, who also coordinated the survey and guided the consultations. The resulting report is owned by MAC and was approved by the Circle of Elders prior to being provided to Woodside. This survey included the entire Scarborough Project development area, including the Operational Area for this EP. This survey was undertaken at a landscape level. Due to the distance of the Operational Area from onshore and coastal areas where the participants are known to hold rights and interests it was not practical to limit the scope of this assessment to a defined boundary. Additionally, in areas of open water beyond the Ancient Landscape that would have been occupied by ancestral people, the relevant values are not expected to have clearly defined or discrete distributions. Therefore, participants were provided with a map of the Scarborough development and asked to identify any values in the surrounding landscape. Consistent with the understanding that cultural values cannot be extrapolated over long distances offshore beyond any native title claims, determinations or ILUAs, no cultural values were identified in the Operational Area or EMBA (McDonald and Phillips 2021). Recommendations of the report related to onshore, nearshore islands and the Ancient Landscape outside the Operational Area of this EP.

- On 10 March 2021 Woodside provided an overview of the Scarborough project to MAC's CEO. No feedback was received on the proposed activity.
- On 19 and 20 May 2021 Woodside provided an overview of the Scarborough project to MAC's Circle of Elders. No feedback was received on the proposed activity.
- On 22 June 2021, MAC provided a report (McDonald and Phillips 2021) on the ethnographic survey to Woodside with the following recommendations:
  - That further ethnographic survey ("Phase II") is conducted
  - That bathymetric mapping and other information is provided to MAC
  - That MAC and Woodside continue to consult on heritage management
  - That an onshore heritage site, outside the Operational Area, be registered by MAC
  - The report did not identify any sites within the Operational Area or EMBA.
- On 7 July 2021 a meeting was held with a presentation and discussion about submerged heritage assessments completed to date and mitigations proposed.
- On 13 July 2021 and 20 July 2021 Woodside met with MAC to discuss the scope of the Phase II survey. Woodside re-committed support for this work on the condition that MAC considered it necessary.
- On 11 November 2021 –MAC provided Woodside a presentation/position about intangible heritage values.
- On 15 December 2021 -Woodside met with MAC Board and Circle of Elders to provide a project overview.
- On 9 January 2022 Woodside sent a letter to MAC clarifying roles, composition, funding and milestones around the Heritage Management Committee.
- On 2 February 2022, Woodside proposed to MAC the establishment of a Heritage Management Committee (HMC) whose role would be to consider the necessary mitigation measures required to address any new heritage information arising following certain milestones related to the Scarborough Project and advise Woodside where any additional mitigation measures are recommended and of any other actions MAC or Woodside should consider.
- On 25 February 2022 an all day meeting was held between MAC and Woodside on heritage management and on 28 February 2022 an email of action items from meeting held on 25 February was sent to MAC.
- On 27 April 2022,Woodside presented to the MAC Board on the Scarborough projects. MAC Board raised concerns about the appropriateness of the Phase II ethnographic survey.
- In a follow up to the 27 April 2022 meeting, on 18 May 2022, Woodside provided a letter to MAC requesting advice as to whether the Phase II survey was still supported by MAC.
- On 15 June 2022 Woodside held a meeting with MAC to discuss the scope, purpose and composition of the Heritage Management Committee (HMC). MAC committed to providing feedback on the HMC in writing.
- On 28 June 2022 MAC provided a letter to Woodside reconfirming their commitment to carry out the Phase II survey.
  - Woodside remains committed to supporting MAC to conduct the Phase II works at the earliest date convenient to MAC and their preferred consultant but will also respect any decision by MAC not to proceed.
  - Woodside believes it has taken all reasonable steps to progress this work and is committed to support this additional ethnographic survey work to be undertaken, subject to MAC undertaking the works.
  - Available bathymetric and other geophysical data is depicted in UWA 2021 and was provided to MAC on 18 May 2021 after the survey but prior to receiving McDonald and Phillips 2021.
- On 20 September 2022 Woodside sent an email to MAC seeking permission to share ethnographic survey results with NOPSEMA.

Ensuring Sufficient Information and Sufficient Time

- On 23 September 2022, Woodside emailed MAC advising of the proposed activity (Appendix F, reference 1.50) and provided a Consultation Information Sheet and Consultation FAQ (Appendix F. 1.51)
- On 28 September, Woodside phoned MAC as a follow up to seek permission to share ethnographic survey results with NOPSEMA.
- On 5 October 2022, Woodside emailed MAC seeking feedback on Heritage Management Committee.
- On 7 October 2022 MAC provided a response to the HMC proposed by Woodside on 2 February 2022, including a number or suggested changes:
  - That recommendations of the HMC need not be unanimous,
  - That the HMC include MAC staff in addition to MAC Board, executive and Circle of Elders,
  - That developments in regards to the World Heritage listing of the Murujuga Cultural Landscape not trigger any meeting of the HMC, and
  - Regarding the funding structure of the HMC.
- On 11 October 2022, Woodside emailed MAC seeking permission to share ethnographic survey results with NOPSEMA.
- On 12 October 2022, Woodside sent a follow-up email (Appendix F, reference 1.50) regarding proposed activity.
- On 18 October 2022, Woodside emails MAC seeking permission to share ethnographic survey results with NOPSEMA.
- On 3 November 2022, Woodside placed a phone call with MAC regarding the Scarborough Ethnographic Survey (McDonald and Phillips 2021).
- On 14 November 2022, MAC provided correspondence (marked private & confidential) in response to Woodside's phone call on 3 November 2022. The correspondence did not provide any new information relating to impacts and risks for the proposed activity.
- On 9 January 2023, Woodside responded to MAC's feedback on the HMC proposal, agreeing to most proposed changes and seeking clarity on some administrative matters.
- On 19 January 2023 Woodside re-provided a copy of all heritage reports for the Scarborough project to MAC. This has not been provided in Sensitive Information as it contains information which MAC has not authorised Woodside to share with NOPSEMA.
- On 20 January 2023, Woodside emailed MAC advising of the proposed activity and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. Woodside also outlined:
  - In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).
  - Woodside is seeking to understand the nature of the interests that Murujuga Aboriginal Corporation (MAC) and its members may have in the 'Environment that May Be Affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet that was attached.
  - Woodside advised that it understands that it will be attending the MAC board meeting on 24 January 2023 to discuss this and information relating to a separate Woodside activity.
  - Woodside advised it would be pleased to speak with MAC members in addition to the MAC Board / office holders.

- On 25 January 2023, Woodside presented to the MAC Board on the status of the proposed activity. The meeting included the following topics relating to the proposed activity and the broader Scarborough Project:
  - EMBA map explained and left with MAC for information
  - Plain English fact sheets provided (Appendix F, reference 1.107 and 1.108)
  - MAC reiterated role of Board v Circle of Elders in consultation processes.
  - Local content outcomes continue to be a priority for MAC and its members.
- Woodside was scheduled to meet with MAC on 16 February, but due to last minute unavailability of the MAC consultant, the meeting was postponed until 20 February 2023. While awaiting the postponed meeting, Woodside proceeded to meet with MAC's CEO to discuss the project including the proposed activity. No feedback was received.
- On 20 February 2023, Woodside presented to the MAC CEO and consultant to discuss the project including the proposed activity. The meeting focused on scope and results of an ethnographic survey conducted in 2020, in context of the proposed activity and the broader Scarborough Project.
- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity and following on from the 20 February 2023 meeting (Appendix F, reference 1.209). Woodside noted it is seeking MAC's feedback as soon as possible on the proposed activity.
- On 7 March 2023, Woodside spoke with MAC to follow up on the material provided and sought meetings with the Board and Circle of Elders if required.
- On 30 March 2023, Woodside spoke with MAC and followed up on the material provided.
- On 3 April 2023, MAC emailed Woodside asking for a list of outstanding issues that Woodside would like to progress
- On 5 April 2023, Woodside responded to MAC via email attaching a letter with a list of open topics, which included the request for feedback on the proposed activity. Woodside requested advice from MAC on:
  - How the activity could impact cultural values
  - If MAC proposes anything to be included in the EP prior to submission
  - If MAC would like a meeting to discuss the activity
  - Whether MAC does not intend to provide advice prior to EP submission.
- On 12 April 2023, Woodside spoke with MAC regarding a number of topics including feedback on the proposed activity. MAC responded that their Board of Directors are meeting soon and that Woodside can expect a forward plan on EP consultation.

Ongoing Relationship Building

- As of May 15 2023, Woodside was still awaiting feedback from MAC.
- Woodside will continue to pursue an ongoing two-way relationship with MAC focused 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	Environment Plan Controls
MAC have provided significant valuable input into the management of known and potential heritage values in	Woodside will continue to consult with MAC on all relevant aspects of this EP prior to and during the execution of activities.	Woodside recognises that whales and other species of totemic importance need to be protected, including their populations and migration patterns (**Section 4.9.1.5**). As

the broader Scarborough Project footprint. As a result of the Board meeting on 25 January 2023, no objection or feedback was received on the proposed activity. The MAC Board noted the need for ongoing consultation with the Board and Circle of Elders. As a result of the CEO meetings on 16 and 20 February 2023, no objection or feedback was received on the proposed activity.	Woodside continues to engage with MAC on the Scarborough project generally, and has committed to ongoing engagement with MAC Board and Elders. 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 7.6**).	assessed in **Section 6**, Woodside considers that when the impacts and risks to marine species, including potential totemic species, have been reduced to ALARP and an acceptable level in offshore areas, the potential impacts and risks to cultural values associated with coastal Indigenous connection with, or traditional uses of marine species and associated ecosystems in nearshore coastal waters are also reduced to ALARP and an acceptable level. Woodside and MAC have established the HMC. Recommendations of the HMC will be implemented where they (independently or in conjunction with other actions) lower the risk of impacts to heritage to ALARP. New heritage information, where applicable to this proposed activity, will be addressed as part of ongoing consultation (**Table 7.2**). Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on MAC's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.
Wirrawandi Aboriginal Corporation (WAC)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** • On 23 September 2022, Woodside emailed WAC advising of the proposed activity (Appendix F, reference 1.55) and provided a Consultation Information Sheet and Consultation FAQ. • On 12 October 2022, Woodside sent a follow-up email (Appendix F, reference 1.62). • On 20 January 2023, Woodside emailed WAC advising of the proposed activity (Appendix F, reference 1.115) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. 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 members as required. • On 27 January 2023 Woodside placed a phone call and emailed WAC to follow up on the information provided (Appendix F, reference 1.130): – Woodside noted the upcoming opportunity to meet with WAC on 21 February while it was in Karratha and would send a proposed time to meet to discuss the information Woodside has provided on a number of Woodside activities and EMBAs including this proposed activity.		

  - Woodside requested it would like to gain an understanding on the best way to progress if the WAC Board wish to have further discussions in relation to this information and also on how they prefer Woodside to engage for any future information shares.
- On 21 February 2023, Woodside spoke with WAC to discuss a consultation meeting.
- On 24 February 2023, Woodside sent an email on a range of Woodside EPs, including the proposed activity following on from the 21 February 2023 meeting (Appendix F, reference 1.197). Woodside noted it is seeking WAC's feedback as soon as possible on the proposed activity.

  Woodside also requested confirmation of the opportunity to meet with the WAC Board when they are next due to meet in Perth in March.
- On 24 February 2023, WAC emailed Woodside:
  - WAC acknowledged receiving the EP information and the meeting with proposed for the Elders and Directors in March 2023, but that the meeting is still yet to be finalised.
  - Further details and associated costs will be discussed once the meeting has been confirmed, in discussion with Woodside.
- On 7 March 2023, WAC emailed Woodside to advise a draft agenda had been set and Woodside had been allotted Thursday 23 March 2023 for presentation.
- On 7 March 2023, Woodside emailed WAC welcoming the opportunity and advised it was looking forward to receiving further information in relation to timing and location.
- On 8 March 2023, Woodside phoned WAC and agreed to proceed with the meeting.
- On 9 March 2023, Robe River Kuruma Aboriginal Corporation (RRKAC) emailed Woodside (and copied in CEO of WAC) advising that it has discussed the proposed activity with the Robe River Kuruma Heritage Advisory Committee and they have recommended that the interests of Robe River Kuruma people are best served through the joint Heritage Advisory Committee that is required under Yaburara Mardudhunera and Kuruma Marthudunera Indigenous Land Use Agreement. RRKAC also suggested that WAC is required to facilitate this Committee and noted there is an emerging need to deal with other proponent matters, so there is an opportunity to link the engagement from a meeting efficiency perspective. Since the separate meeting with WAC had already been arranged, Woodside decided to proceed with both meetings.
- On 15 March 2023, Woodside emailed WAC to follow up on details relating to the meeting of the WAC Board and Elders on 23 March 2023 in Perth.
- On 15 March 2023, WAC emailed Woodside:
  - WAC advised that the 23 March 2023 meeting has been scheduled and arranged.
  - WAC advised that as discussed previously the intention is to present to WAC Directors and Elders on information requires WAC feedback.
- On 16 March 2023, WAC emailed Woodside confirming room booking for meeting and requested confirmation of attendees.
- On 17 March 2023, Woodside emailed WAC advising there would be relevant representation at the meeting to provide EP information as requested and that the broader community activity for awareness would be covered.
- On 17 March 2023, Woodside emailed WAC to advise 7 representatives from Woodside would be attending the meeting.
- On 23 March 2023, Woodside presented to a meeting of the WAC Board and Elders in Perth:
- Woodside described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
- Woodside encouraged WAC to raise anything which they feel is missing in the information provided during the meeting, or any issues or concerns.
- Woodside displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.

- Woodside provided an overview of the broader Scarborough Project and overview of activities.
- WAC asked a number of questions relevant to the broader Scarborough Project but not this petroleum activity.
- Woodside described the subsea infrastructure installation proposed activities, including describing the equipment to be installed.
- Woodside described the proposed installation of gravimetry structures.
- WAC asked whether any gravimetry structures will be lost or buried over field life, Woodside responded that this is possible but not planned to happen. The location of each is precisely known from installation and surveys.
- Woodside 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.
- The EMBA for each proposed Scarborough activity was displayed, and the individual worst case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
- WAC asked how the EMBA influences consultation, Woodside responded that the EMBA has always been understood but it is now being used to identify people who may have an interest in the activity.
- Woodside noted this concluded the Scarborough section of the meeting and called for any further questions or feedback., and called for any further questions or feedback. None were received.
- WAC stated that this kind of information sharing is important, and that Woodside's time is appreciated. WAC asked whether this type of information is broadly available to the community, Woodside responded that there are a number of open community sessions available in the region where it could be discussed [referring to ongoing quarterly heritage update meetings that WAC are invited to.
- WAC indicated that since they are engaging with a number of energy industry operators they will consider the information provided and discuss internally before any further response.
- Woodside provided personal contact details for further feedback. Woodside provided NOPSEMA contact details, should WAC desire to provide feedback directly to the regulator.
- On 3 May 2023, Woodside emailed a letter to WAC regarding the meeting with the joint Robe River Kuruma and Wirrawandi Joint Heritage Advisory Committee (HAC) on 31 March:
- Woodside thanked the HAC for the meeting, their careful consideration of the matters and feedback provided
- Woodside acknowledged that the RRKAC have interests in the EMBA and noted that we want to ensure impacts are as minimal as reasonably practicable.
- A high level overview of presented topics was provided.
- Woodside provided responses to questions noted from the meeting that were not related to the proposed activity.
- Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.
- On 3 May 2023, Woodside emailed a letter to WAC regarding the meeting with WAC Directors and Elders on 23 March:
- Woodside thanked WAC for the meeting and their careful consideration of the matters
- Woodside acknowledged that WAC has interests in the EMBA and noted that we want to ensure impacts are as minimal as reasonably practicable
- A high-level overview of presented topics was provided.

- Woodside provided responses to questions noted from the meeting that were not related to the proposed activity. Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.

Quarterly Heritage Meetings:

- Woodside convenes a quarterly meeting of Traditional Custodian representatives from the Representative Aboriginal Corporations involved in historical native title claims over the Burrup Peninsula, including WAC. Individual attendees are nominated by their representative Aboriginal Corporations. These meetings are summarised separately in this table.
- Copies of slides are made available to representative Aboriginal Corporations for the general awareness of members who were not able to attend individual meetings.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
During face-to-face engagement with the WAC board and directors and circle of elders, WAC requested further information on topics related to this proposed activity which was responded to during the meeting: • Potential for gravimetry structures to be lost during field life • The relevance of the EMBA to consultation WAC expressed a desire for ongoing engagement and partnership. WAC raised feedback and request for further information on the Scarborough project more broadly which will be provided as part of ongoing engagement..	Woodside has continued to engage WAC on the proposed activity. No material issues or concerns related to the proposed activity were raised during consultation to date. Woodside invited further feedback in accordance with Woodside's approach to ongoing consultation (see **Section 7.6**). WAC as had a reasonable opportunity to participate in consultation. Consultation with WAC has not identified any other groups or individuals relevant to communally held functions, activities or interests. 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 7.6**).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on WAC's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.

Yinggarda Aboriginal Corporation (YAC)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

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 regards to their native title rights. No native title has been recognised over the Project Area, however YMAC is identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks.

- On 7 July 2022, Woodside met with YMAC to request advice on the appropriate cultural authorities for the Scarborough project area, including but not limited to the scope of this EP and nearby marine parks.
  - Woodside described the Scarborough Project and its footprint and gave an overview of indigenous parties consulted.
  - Woodside noted that YMAC was identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks. Woodside sought to understand if the cultural values of the nearby Gascoyne Marine Park may extend into the offshore Scarborough project areas.
  - Woodside requested advice on how best (in addition to work completed) to identify any cultural values in the Marine Parks and in the broader project footprint.

YMAC requested Woodside provide the relevant detailed information relating to the location and extent of the project.

- On 19 July 2022, YMAC responded to Woodside and stated the area Woodside has identified requires correspondence directed to Murujuga Aboriginal Corporation (MAC) and Ngarluma Aboriginal Corporation (NAC).
- No reference was made at that stage about consulting with YAC.
- On 20 January 2023, Woodside emailed YAC via the representative body Yamatji Marlpa Aboriginal Corporation (YMAC) advising of the proposed activity (Appendix F, reference 1.116) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. 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 members as required.
- On 22 January 2023, YAC/YMAC emailed Woodside to advise it will make contact with Woodside once the consultation material has been reviewed.
- On 22 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity (Appendix F, reference 1.165). Woodside noted it is seeking YAC's feedback as soon as possible on the proposed activity. Woodside stated that it would be grateful to meet with YAC at the earliest convenience at location of YAC's preference, providing budget and resources.
- On 24 February 2023, Woodside followed up with YAC/YMAC via phone call. YAC/YMAC advised it will send an email on 24 February to discuss an invitation for Woodside to meet with YAC.
- On 20 March 2023, Woodside emailed YMAC to follow up the discussed invitation for a face-to-face meeting with its Board of Directors and offering a phone discussion if YAC had any questions on the activities in the meantime.
- On 23 March 2023, YMAC responded and proposed a meeting on 3 May 2023 in Carnarvon or online and provided an estimated of its proposed costs. The invitation was accepted and arrangements made for a pre-meeting with YMAC to coordinate details.
- On 23 March 2023, Woodside responded by email confirming 3 May date for a meeting in Carnarvon, stating that preference is to meet face to face to help develop relationship.
- On 24 March 2023, the YMAC lawyer emailed to arrange a pre-meet conversation on 31 April 2023.
- On 24 March 2023, Woodside emailed to confirm the pre-meet conversation.
- On 27 March 2023 the YMAC lawyer emailed Woodside to confirm meeting details.
- On 30 March 2023, the YMAC lawyer emailed to cancel the pre-meet conversation

- On 27 April 2023, Woodside emailed the YMAC lawyer to confirm timing and location for the face-to-face meeting on 3 May but the email bounced back requesting correspondence be forwarded to an alternate contact in YMAC.
- On 27 April 2023, Woodside forwarded the email seeking to confirm time and location for the planned meeting to the alternate contact in YMAC.
- On 27 April 2023, YMAC confirmed by email and phone call that they no long represent Yinggara Aboriginal Corporation and that the meeting on 3 May had been cancelled. Gumala Aboriginal Corporation is now representing YAC and YMAC is in the process of hand over, including correspondence with Woodside. On 28 April 2023, Woodside attempted to call Gumula Aboriginal Corporation and left a voicemail to establish connection.
- On 28 April, Woodside emailed Gumula Aboriginal Corporation to establish contact and inform them of the prior context. Woodside stated that it is still interested in meeting with the YAC board if they are interested.
- On 8 May, Woodside phoned Gumula Aboriginal Corporation to follow up the email, explaining that it is seeking to consult Yinggarda on the proposed activity and how the meeting had been cancelled. Gumula Aboriginal Corporation indicated that the email address previously contacted was correct and indicated that it would call back. No return call was received.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
In consultation in the course of preparing the EP since January 2023, YAC has not provided feedback, objections or claims in response to the information provided. YAC invited Woodside to discuss the proposed activity with its Board of Directors, which has since been cancelled due to change of support services.	YAC has had a reasonable opportunity to participate in consultation Consultation with YAC has not identified any other groups or individuals relevant to communally held functions, activities or interests. No material issues or concerns related to the proposed activity were raised during consultation to date. Woodside invited further feedback in accordance with Woodside's approach to ongoing consultation (see **Section 7.6**). 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 7.6**).	Based on the engagement to date, no additional controls have been identified.

Yindjibarndi Aboriginal Corporation

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 20 January 2023, Woodside emailed Yindjibarndi advising of the proposed activity (Appendix F, reference 1.117) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. 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 members as required.

- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity (Appendix F, reference 1.198).
- On 26 February 2023, Yindjibarndi emailed Woodside. Yindjibarndi advised that it will not be providing any comment on the proposed activity and noted it respected the traditional owners whose land and sea lies adjacent to, and within the precinct of, the projects, and will leave any comment and advice to be provided by them.
- On 28 February 2023, Woodside emailed Yindjibarndi to thank them and noted the response.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
Yindjibarndi has provided a response and advised that it will not be providing any comment on the proposed activity. Yinjibarndi expressed that they would prefer that traditional owner groups with land and sea adjacent to and within the precent of the projects provide comment.	Yinjibarndi Aboriginal Corporation has informed Woodside that it does not intend to provide feedback. Woodside agrees with Yinjibarndi's position that traditional owners whose land and sea are adjacent to or within the precent of the projects should be able to provide comment. 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 7.6**).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on YAC's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.

Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

Historic Engagement

Prior to sending out the Consultation Information Sheets, Woodside spoke to BTAC on January 4 to discuss the best way forward to consult with BTAC. On 10 January 2023, Woodside emailed BTAC stating it would be very grateful for the opportunity to meet with BTAC in the second half of February as discussed, or sooner if possible. Woodside also offered to cover the reasonable costs of consultations.

Specifically, in relation to this EP, Woodside stated they would like to discuss:

- Thalanyji's expectations for consultation - how can Woodside and Thalanyji best work together
- Thalanyji's aspirations and plans - how can Woodside support Thalanyji regarding potential employment and contracting opportunities
- Environmental planning consultations about Woodside's Scarborough Project with gas fields planned to be located offshore, approximately 380km northwest of Karratha.

In addition:

- Woodside advised it would like to and is required to consult with BTAC about the nature of any interests BTAC have in the "environment that may be affected" (EMBA) by this work, and any concerns BTAC may have about potential environmental impacts, so these concerns can be addressed through the environmental planning and approvals process.
- Woodside provided further information about government guidelines for these consultations and provided a link to https://consultation.nopsema.gov.au/environment-division/consultation-guideline/.
- Woodside advised it would reach out in the next week with consultation information sheets.
- Woodside stated in the 10 January email that it would like to arrange a meeting between senior Woodside staff and BTAC's Board if BTAC felt that was appropriate and it would await guidance from BTAC.

Ensuring Sufficient Information and Sufficient Time

- On 20 January 2023, Woodside emailed BTAC advising of the proposed activity (Appendix F, reference 1.120) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. 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 members as required.
- On 23 January 2023, Woodside emailed BTAC with the consultation information noting it had previously sent an email to an incorrect email address (Appendix F, reference 1.121).
- On 24 January 2023, BTAC emailed Woodside acknowledging it had received the information.
- On 27 January 2023, Woodside placed a phone call and emailed BTAC to follow up on the information provided (Appendix F, reference 1.133).
- On 20 February 2023, BTAC provided a letter to Woodside in relation to consultation on the broader Scarborough activities, including this proposed activity:
  - BTAC referred to the advertisements placed by Woodside regarding the proposed activity which sought feedback from persons or organisations who may hold interests in the EMBA by the activities.
  - BTAC advised it was seeking the opportunity to engage with Woodside and NOPSEMA on the activity.
  - BTAC advised it seeks support from Woodside to enable BTAC to define and articulate its values on Sea Country in a manner that could be more clearly understood by the offshore sector, government, and the community. This would enable BTAC and Woodside to collaborate to develop effective management plans that can provide adequate protection to sea country values.
  - BTAC advised the information in the consultation fact sheets is very general. BTAC seeks support from Woodside to obtain technical support to review the information and provide BTAC and its members with feedback on the project risks to Sea Country and help BTAC contemplate the potential management controls that could be developed to protects its values and interests.
  - BTAC requested that emergency response capability is developed and locally provided to be able to respond to potential activities/actions that may cause an impact in the EMBA. BTAC encouraged Woodside and industry to build capacity and capability in BTAC's ranger program so that it could participate in response planning and management activities.

- BTAC noted that ongoing consultation with BTAC will be imperative and likely continuous given recent changes to consultation requirements and this will continue to be a burden on the organisation. BTAC requested that Woodside enter into a consultation or engagement framework to ensure BTAC can be properly resourced financially and intellectually to participate in the consultation and management planning processes for the activities.

- On 22 February 2023, Woodside emailed BTAC:
  - Woodside thanked BTAC for its 20 February 2023 correspondence regarding consultations about the Scarborough project.
  - Woodside advised it will respond to this correspondence in the coming days and would be most grateful for the opportunity to meet with BTAC to discuss the matters raised in its letter and Woodside's relationship more broadly.
- On 13 March Woodside contacted BTAC via phone to discuss the correspondence on 20 February 2023.
- On 17 March 2023, Woodside emailed a letter to BTAC:
  - Woodside thanked BTAC for its feedback and it looks forward to working with BTAC.
  - Woodside advised it acknowledges and respects that BTAC on behalf of the Thalanyji People (Thalanyji) has interests in the EMBA by the Scarborough Activities and wants to ensure these values and interests are protected.
  - Woodside advised it also acknowledges that through BTAC's correspondence, BTAC has proposed several important risk mitigation and management measures.
  - Woodside agreed that the principles BTAC have outlined are important. To paraphrase, these principles are that:
  - Woodside and BTAC work in a structured way and on an ongoing basis to learn about, articulate and understand each other's values, aspirations and work, particularly to ensure BTAC understands how Woodside's activities may impact on Thalanyji's values and interests.
  - Arising from this consultation, Woodside and BTAC will continue to identify environmental risks and design and implement monitoring and management responses to these risks on an ongoing basis. This includes building on Woodside's knowledge base to understand Thalanyji's values and interests. Woodside understands this work will also improve BTAC's capability and capacity to identify risks and address monitoring and management arrangements, including through BTAC's ranger program.
  - BTAC has requested that Woodside provides BTAC with the resources that are necessary to undertake this work, including through the provision of information and Woodside personnel to provide briefings, and independent expert anthropological and environmental management advice to BTAC.
  - Woodside advised that in response to the provision of independent expert environmental management advice to BTAC, Woodside would be pleased to provide the resources necessary for BTAC to obtain and retain this advice on the basis that such advice is provided by an experienced and reputable oil and gas environmental management expert who is independent of Woodside, and who has the capacity to undertake this work to meet consultation schedules.
  - Woodside suggested a range of organisations for BTAC's consideration who are not working for Woodside.
  - Woodside also advised it would also be pleased to support BTAC to acquire anthropological advice.
  - Woodside advised that it respects that BTAC has assessed the likelihood of unplanned events and impacts as possible, Woodside has assessed the likelihood of a major unplanned hydrocarbon release event as highly unlikely. By way of example the Scarborough Activities EMBA's are premised on an unmitigated diesel spill arising from the collision of large vessels, the piercing of fuel tank(s) from that collision causing all the fuel tank to leak out, and no control measures being enacted. Woodside has been operating for over 35 years and has never caused an unplanned event like this, however Woodside must plan for and consult about such events.
  - Woodside advised that Woodside's target is to ship the first cargo of LNG from the Scarborough project in 2026, and to enable that:
    - Drilling and completions work is planned to occur anytime within a five-year window commencing in the second half of 2023, pending approvals.

    - Seabed installation and trunkline installation activities in Commonwealth waters are expected to commence in around late 2023, pending approvals.
    - Subsea infrastructure installation activities are planned to commence in the second half of 2023, pending approvals, with activities occurring in multiple campaigns and estimated to be completed within about 18 months.
    - Seismic activities are planned to start in the first half of 2023, pending approvals, and will take place over a period of between 55 and 70 days.
  - Links to relevant consultation information sheets to the above activities were also provided to BTAC for the second time (first sent on 23 January).
  - Woodside noted that considering the above schedule, there is time for BTAC and Woodside to work together in the short, medium and longer term to identify, develop and refine management responses to environmental risk.
  - Woodside advised that with reference to the timeframes as described above, environmental protection and management associated with these activities is subject to an adaptive management approach. This means that consultation between Woodside and BTAC about environmental risk and management responses is ongoing, and changes can be made to improve environmental protection and management practices over time, including in the associated Environment Plans (EPs). Woodside proposed the following next steps:
    - Woodside formalises the matters outlined in its correspondence by including in each of the Environment Plans statements along the following lines:
    - BTAC for and on behalf of Thalanyji has interests and values in the EMBAs and is concerned about the possible impact on these interests and values, including to Sea Country, arising from Woodside's proposed activities.
    - BTAC, with support from Woodside and through the provision of independent expertise, will on an ongoing basis:
    - convey to Woodside the nature of Thalanyji's interests and values, noting that BTAC would like to conduct work to articulate those values in a manner that Woodside understands.
    - provide information to Woodside about how those interests and values intersect with the EMBAs and how that should be managed.
    - Woodside will engage in ongoing consultation with BTAC for the purposes of ongoing monitoring, management and emergency response associated with environmental risk.
    - Woodside and BTAC will work under an adaptive management approach as the understanding of each other's values and interests, activities, needs and aspirations grow during the course of ongoing consultation. This means that Woodside's Environment Plans may be updated from time to time so they accurately reflect environmental risk as they relate to BTAC's interests and values, and the management measures that Woodside and BTAC will put in place to avoid and otherwise mitigate and manage environmental risk.
    - BTAC can at any time can make direct representations to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) about the nature of BTAC's interests and how they may be affected by Woodside's activities.
  - Woodside proposed if BTAC considers it appropriate, that the principles discussed in its correspondence (this letter and BTAC's correspondence of 20 February 2023) apply to the various decommissioning and drilling EPs that Woodside has notified BTAC about. This will ensure these arrangements are formalised into regulatory processes and documentation. As per Woodside's ongoing consultation approach, feedback continues to be assessed through the life of the EPs.
  - Woodside advised BTAC that its letter of 20 February 2023 and this response will be included in the EP. Woodside requested that if their feedback is sensitive, please inform Woodside, and it will make this known to NOPSEMA upon submission of the Environment Plans to ensure this information remains confidential to NOPSEMA.
- On 30 March 2023, Woodside spoke with BTAC to follow up on correspondence described above. BTAC indicated that they desire a consultation agreement and intend to provide correspondence accordingly.

- On 17 April 2023, Woodside spoke with BTAC by telephone. The BTAC representative stated that they were aware that there were archaeological sites identified on nearshore islands and a cultural obligation to care for the environmental values of sea country. The BTAC representative stated there was in principle agreement to submission of current EPs while continuing to negotiate the collaboration agreement for support for rangers and support for recording of cultural values.
- On 18 April 2023, BTAC emailed a response regarding Woodside's Scarborough activities:
  - BTAC agreed that subject to formalising arrangements, BTAC agrees in principle for Woodside to include the statements described in our letter dated 17 March.
  - BTAC proposed that a Collaboration Agreement would be an appropriate mechanism to provide ongoing feedback to Woodside regarding its activities.
  - BTAC invited Woodside to a board meeting to discuss Scarborough activities and other short, medium and longer term activities, discuss BTAC's strategic plan and details of a collaboration agreement.
- On 19 April 2023, Woodside emailed to accept an invitation from BTAC to attend their forthcoming board meeting and requesting half a day of the board's time, preferably before the first week of May.
- On 27 April 2023, Woodside followed up in relation to BTAC's proposed collaboration agreement and sought confirmation that BTAC agrees to Woodside submitting the Scarborough EPs, moving from pre-submission consultation to ongoing consultation.

Ongoing Relationship Building

- As of May 15 2023, Woodside was still awaiting confirmation on when the BTAC Board was meeting and if they could attend.
- There had been no response to the 27 April 2023 correspondence seeking confirmation that BTAC agrees to Woodside submitting the Scarborough EPs, moving from pre-submission consultation to ongoing consultation.
  - Woodside will continue to pursue an ongoing two-way relationship with BTAC including the development of a Collaboration Agreement focused 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	Environment Plan Controls
Woodside commenced consultation with BTAC on 4 January 2023. Through consultation relevant to the activity, BTAC has: • Stated that their interests include archaeological sites identified on nearshore islands • State a cultural obligation to care for the environmental values of sea country. • Requested Woodside supports BTAC in obtaining technical advice relating to the proposed activity which was sent to BTAC.	Woodside has been in a two-way dialogue with BTAC since 4 January 2023. Consultation with BTAC has not identified any other groups or individuals relevant to communally held functions, activities or interests No material issues or concerns related to the proposed activity were raised during consultation to date. Woodside invited further feedback in accordance with Woodside's approach to ongoing two-way consultation (see **Section 7.6**). This will be facilitated via the Collaboration Agreement that Woodside and BTAC are committed to working towards. 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	Woodside considers the measures and controls descried within this EP address the potential impact from the proposed activities on BTAC's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.

• Expressed desire to be involved in local emergency response capability • Woodside has responded to these items accordingly and engaged in a two-way dialogue with BTAC about working together in the future.	assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

Robe River Kuruma Aboriginal Corporation (RRKAC)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 20 January 2023, Woodside emailed RRKAC advising of the proposed activity (Appendix F, reference 1.119) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. 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 members as required.
- On 31 January 2023, Woodside met virtually with a RRKAC representative to discuss the proposed activity and ways forward for consultation:
  - RRKAC advised during the virtual meeting that the activity would need to be considered by their Heritage Advisory Committee scheduled for late February 2023.
- On 24 February 2023 Woodside emailed RRKAC to follow up on the information provided (Appendix F, reference 1.201) and the proposed February 2023 meeting. Woodside noted it is seeking RRKAC's feedback as soon as possible on the proposed activity.
- On 9 March 2023, RRKAC emailed Woodside (and copied in CEO of Wirrawandi Aboriginal Corporation (WAC)):
  - RRKAC advised it has discussed the proposed activity with the Robe River Kuruma Heritage Advisory Committee and they have recommended that the interests of Robe River Kuruma people are best served through the joint Heritage Advisory Committee that is required under Yaburara Mardudhunera and Kuruma Marthudunera Indigenous Land Use Agreement.
  - RRKAC also suggested that WAC is required to facilitate this Committee and noted there is an emerging need to deal with other proponent matters, so there is an opportunity to link the engagement from a meeting efficiency perspective.
- Between 15-17 March 2023, Woodside exchanged email correspondence with RRKAC (and WAC) and in relation to establishing a meeting with the joint Heritage Advisory Committee (HAC). The meeting was confirmed for 31 March 2023.
- On 15 March 2023, Woodside emailed RRKAC to ask when date of joint HAC would occur and how Woodside can support it.
- On 15 March 2023, RRKAC emailed Woodside emailed regarding contacts for the proposed meeting.
- On 15 March 2023, Woodside emailed RRKAC to advise who from Woodside would lead the process.
- On 15 March 2023, RRKAC emailed Woodside to advise the joint HAC meeting was scheduled tentatively for 31 March 2023 but that this would depend on WAC's availability but that the RRKAC representatives are able to attend.
- On 31 March 2023, Woodside met with the Robe River Kuruma and Wirrawandi Joint Heritage Advisory Committee (HAC) in Karratha:

- Woodside described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
- Woodside encouraged HAC to raise anything which they feel is missing in the information provided during the meeting, or any issues or concerns.
- Woodside displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
- Woodside provided an overview of the broader Scarborough Project and overview of activities.
- HAC asked what would happen if something happens to subsea pipelines in operation. Woodside responded that dry gas would be released, and a portion would be dissolved into the water before reaching surface depending on water depth, and gas reaching the surface could be a safety risk or contribute to greenhouse gas in the atmosphere.
- HAC asked a number of questions related to the broader Scarborough project but not this proposed petroleum activity.
- Woodside described the subsea infrastructure installation proposed activities. Flowlines link up and collect the gas, bringing it back to the floating production facility.
- Woodside described the proposed installation of gravimetry structures. Approximately 200 of these are placed from a vessel. Woodside played a video showing subsea infrastructure and gravimetry installation.
- Woodside 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.
- The EMBA for each proposed Scarborough activity was displayed, and the individual worst case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
- HAC asked what response Woodside would implement for a diesel spill. Woodside responded that response arrangements are checked by NOPSEMA and since diesel rapidly evaporates and disperses response is mainly monitoring.
- Woodside noted this concluded the Scarborough section of the meeting, and called for any further questions or feedback. None were received.
- Woodside provided personal contact details for further feedback.
- Woodside provided NOPSEMA contact details, should the HAC desire to provide feedback directly to the regulator.

- On 3 May 2023, Woodside emailed a letter to RRKAC:
- Woodside thanked the HAC for the meeting, their careful consideration of the matters and feedback provided.
- Woodside acknowledged that the RRKAC have interests in the EMBA and noted that we want to ensure impacts are as minimal as reasonably practicable.
- A high level overview of presented topics was provided.
- Woodside provided responses to questions noted from the meeting that were not related to the proposed activity.
- Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.
- Woodside provided responses to questions noted from the meeting that were not related to the proposed activity.
- Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
During face-to-face engagement, the HAC requested further information on topics related to this proposed activity which was responded to during the meeting: ● Potential risk associated with loss of containment from subsea pipelines ● Spill response arrangements ● The HAC expressed a desire for ongoing engagement and partnership. ● The HAC raised feedback and request for further information on the Scarborough project more broadly which will be provided as part of ongoing engagement.	Woodside continues to engage RRKAC in relation to the proposed activity. No material issues or concerns related to the proposed activity were raised during consultation to date. Woodside invited further feedback in accordance with Woodside's approach to ongoing consultation (see Section 7.6). RRKAC has had a reasonable opportunity to participate in consultation Consultation with RRKAC has not identified any other groups or individuals relevant to communally held functions, activities or interests 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 7.6**).	Woodside considers the measures and controls descried within this EP address the potential impact from the proposed activities on RRKAC's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** 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 regards to their native title rights. No native title has been recognised over the Project Area, however YMAC is identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks. • On 7 July 2022, Woodside met with YMAC to request advice on the appropriate cultural authorities for the Scarborough project area, including but not limited to the scope of this EP and nearby marine parks. • On 6 January 2023, Woodside phoned NTGAC via the representative body Yamatji Marlpa Aboriginal Corporation (YMAC) for the purpose of introduction and to explain that Woodside will be sending information concerning EPs. • On 20 January 2023, Woodside emailed NTGAC via the representative body YMAC advising of the proposed activity (Appendix F, reference 1.111) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet.		

- On 27 January 2023 Woodside phoned and emailed NTGAC/YMAC to follow up on the information provided. Woodside requested if NTGAC required anything further ahead of a planned meeting with Woodside on 16 February 2023.
- On 1 February 2023, NTGAC/YMAC phoned Woodside to confirm the planned meeting for 16 Feb. It was arranged to hold a subsequent phone discussion between key representatives on 10 February to discuss scope for the consultation meeting. Woodside said that it is anticipating feedback from the group on the proposed activity at this consultation meeting and asked for any specific families or individuals that Woodside should be engaging with to be invited. NTGAC/YMAC responded that consultation with NTGAC as the representative body is appropriate.
- On 10 February 2023, Woodside phone NTGAC and described the proposed scope of the consultation meeting planned for 16 February.
- On 16 February 2023, Woodside presented to a meeting of the NTGAC/YMAC Board:
  - Woodside described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
  - Woodside encouraged NTGAC to raise anything which they feel is missing in the information provided during the meeting.
  - Woodside displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
  - Woodside provided an overview of the broader Scarborough Project and overview of activities.
  - YMAC asked whether there could be any impact from taking gas from Scarborough on other fields
  - Woodside confirmed there would be no impact as the Scarborough fields are not connected with any other fields.
  - Woodside provided an overview of the proposed activity and a summary of both planned and unplanned impacts and associated controls.
  - Woodside described the subsea infrastructure installation proposed activities, including equipment to be installed.
  - Woodside described the proposed installation of gravimetry structures.
  - Woodside noted that decommissioning and the ability to remove equipment has been part of the design process across the Scarborough Project
  - Woodside 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. It was noted that at a high level the categories of risks and impacts are similar to decommissioning previously discussed
  - Woodside explained that there is significantly more seabed disturbance associated with Scarborough activities than decommissioning, such as dredging and infrastructure installation, and that over a number of years Woodside has been undertaking modelling and research to understand impacts like dredge plumes. This also incorporates real monitoring observations from previous activities.
  - NTGAC asked if Woodside could explain impacts on whales from noise.
  - Woodside replied that there has been modelling work done and applied to understanding of thresholds for hearing and behavioural impacts. It shows that there will be no lasting effect on whales, however there could be short term hearing impacts. Measures have been taken like removing driven piling from the activities to reduce noise impacts.
  - Woodside further explained that there are not expected to be many turtles, dugongs or humpbacks offshore but there could be pygmy blue whales.
  - YMAC asked how Woodside will monitor for whales.

- Woodside explained that it will have dedicated marine fauna observers and systems which can listen for whale song on some vessels. Presence of whales can postpone activities. Woodside noted that noise impacts are time bound and that whale tagging and behaviour monitoring shows they are migrating and unlikely to stay around for hours, reducing the likelihood of impact from noise
- The EMBA for each proposed Scarborough activity was displayed, and the individual worst case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
- Woodside noted this concluded the Scarborough section of the meeting, and called for any further questions or feedback. None were received.
- Woodside stated that there is significant work and consultation coming up, and it hope to spend more time with NTGAC to understand expectations and desire of how Woodside can work with NTGAC
- YMAC expressed that they are being inundated with requests for consultation from oil and gas operators, and are working internally on processes and priorities for consultation
- Woodside welcomed the transparency and discussion on capacity
- NTGAC expressed that consulting on these activities is not viewed as wasting time, but consultation which gives nothing back to the community is not a priority. They are interested in partnership programs and on-country engagements.
- Woodside stated that while all the big companies will have deadlines and need to get feedback to meet legal requirements, WE desires it to be a jointly held process and that NTGAC desires any support or assistance please request it.
- Woodside provided personal contact details for further feedback
- Woodside provided NOPSEMA contact details, should NTGAC desire to provide feedback directly to the regulator.

- On 21 February 2023, NTGAC/YMAC emailed Woodside to seek clarification of the attendee names at the 16 February 2023 Board meeting.
- On 21 February 2023, Woodside emailed NTGAC/YMAC the attendee names at the 16 February 2023 Board meeting and provided a copy of the presentation pack. Woodside followed up on request for any further feedback on the proposed activity.
- On 22 February 2023 NTGAC/YMAC emailed Woodside to thank Woodside for sending the relevant information.
- Between 20-23 February 2023, YMAC and Woodside exchanged emails about additional resourcing so NTGAC could obtain independent expertise on a different activity but not for the proposed activities in this EP.
- On 22 March 2023, Woodside followed up with NTGAC/YMAC on any feedback on the proposed activities.
- On 28 March 2023, YMAC followed up with Woodside on a Woodside action arising from the 16 February meeting to supply photos and diagrams in relation to the different activity.
- On 31 March 2023, Woodside followed up with the relevant photos and diagrams, noting contact details and welcoming any further feedback. Woodside thanked NTGAC for their work to date and requested that NTGAC reach out for any assistance.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
During face-to-face engagement, the NTGAC requested further information on topics related to this proposed	Woodside continues to engage NTGAC via YMAC in relation to feedback following the 16 February 2023 Board meeting.	Woodside considers the measures and controls descried within this EP address the potential impact from the

activity which was responded to during the meeting: ● Potential impacts of noise on whales ● Whale monitoring arrangements ● The NTGAC expressed a desire for ongoing engagement and partnership. ● No further feedback has been provided.	No material issues or concerns related to the proposed activity were raised during consultation to date. Woodside invited further feedback in accordance with Woodside's approach to ongoing consultation (see **Section 7.6**). NTGAC has had a reasonable opportunity to participate in consultation. Consultation with NTGAC has not identified any other groups or individuals relevant to communally held functions, activities or interests 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 7.6**).	proposed activities on NTGAC's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.

Malgana Aboriginal Corporation

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 20 January 2023, Woodside emailed Malgana advising of the proposed activity (Appendix F, reference 1.112) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. The email requested information on the interests that Malgana and its members may have within the EMBA, information on how Malgana would like to engage, and requested that Malgana provide information to members as required.
- On 20 January 2023, Woodside emailed Malgana with the consultation information to an alternative contact noting it had previously received a bounce back.
- On 1 February 2023, Woodside sent a follow up email to Malgana (Appendix F, Reference 1.134).
- On 6 February 2023, the Malgana CEO emailed Woodside to advise they were discussing the consultation information with the Malgana Board at the next meeting.
- On 10 February 2023, Woodside emailed Malgana to request any feedback from its Board of Directors.
- On 21 February 2023, Woodside followed up with Malgana via email to request any feedback from its Board of Directors.
- On 22 February 2023, Malgana emailed Woodside regarding scheduling an opportunity for Woodside to present at an upcoming Malgana Board Meeting.
- On 7 March 2023, Malgana emailed Woodside:
  - Malgana provided proposed dates (3-4 April 2023) for a meeting.
  - Malgana requested if one or two hours is requested for Woodside's presentation and discussion.
- On 9 March 2023, Woodside emailed Malgana:
  - Woodside confirmed the proposed meeting dates and logistics.

  - Woodside requested a half day to present on the EPs on which it is seeking feedback.
- Between 19 March and 23 March 2023, emails were exchanged to coordinate the meeting between Woodside and Malgana representatives
- On 4 April 2023, Woodside met with Malgana Aboriginal Corporation (Malgana) representatives in Perth.
  - Woodside described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
  - Malgana asked what arrangements are in place for earthquake tremors, Woodside responded that facilities and equipment are designed to withstand seismic activity which could be expected
  - Woodside encouraged Malgana to raise anything they feel is missing in the information provided during the meeting, or any issues or concerns.
  - Malgana stated that the Shark Bay environment is unique and has the largest living organism in the world. It also contains stromatolites and microbial mats which are among the oldest living organisms in the world. Stochastic modelling of the worst-case credible spill scenario for the petroleum activity indicates that these receptors would not be contacted.
  - Woodside displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
  - Malgana expressed that they are very interested in genuine relationship and partnership building with long term structure. Woodside responded that we are very open to this and look forward to working together.
  - Woodside described how EMBAs are prepared and their relevance to consultation
  - Malgana stated that they believe there are flaws in modelling related to Shark Bay hydrodynamics. Woodside responded that nearshore processes may not be very accurate in the model, but we plan for spill response in Shark Bay regardless.
  - Woodside provided an overview of the broader Scarborough Project and overview of activities.
  - Woodside described the subsea infrastructure installation proposed activities. Flowlines link up and collect the gas, bringing it back to the floating production facility
    - Woodside described the proposed installation of gravimetry structures. Approximately 200 of these are placed from a vessel. Woodside played a video showing subsea infrastructure and gravimetry installation
    - Woodside 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.
    - The EMBA for each proposed Scarborough activity was displayed, and the individual worst case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
    - Woodside noted this concluded the Scarborough section of the meeting, and called for any further questions or feedback. None were received.
    - Woodside provided personal contact details for further feedback
  - Woodside provided NOPSEMA contact details, should Malgana desire to provide feedback directly to the regulator.
- On 20 April 2023, Malgana Aboriginal Corporation emailed Woodside:
  - Malgana thanked Woodside for the consultation meeting, noting that the Board enjoyed the informative and detailed information provided
  - Malgana thanked Woodside for its proactive response to ensure Malgana country is sufficiently protected and ready in case of unplanned events
  - Malgana noted discussion points from the meeting:

        - Agreement that an ongoing partnership should be formed
        - Emphasised the sensitivity and importance of Shark Bay culturally and environmentally
        - Indicated concerns regarding hydrodynamic modelling and reflection of flow into the bay
        - Discussion on how feedback helps Woodside improve Environment Plans
    - Malgana requested:
        - Woodside to clarify how hydrodynamics of Shark Bay are resolved in modelling
        - Provision of Malgana rangers with training and equipment for incident response
        - A Shark Bay response team with emergency response plans and exercises
        - A communication strategy for emergencies
        - Information on how Woodside can support Malgana rangers and people
        - A timeframe for a follow up meeting to discuss these points
        - Guidance on the format of desired feedback.
- On 18 May 2023, Woodside emailed Malgana:
    - Woodside thanked Malgana for the consultation meeting and its correspondence of 20 April, and their careful consideration of the matters presented
    - Woodside acknowledged that Malgana have interests in the EMBA and noted that we want to ensure impacts are as minimal as reasonably practicable.
    - A high level overview of presented topics was provided.
    - Woodside provided responses to the requests made in Malgana correspondence of 20 April:
    - Woodside's hydrocarbon spill modelling is provided by specialist consultants using global best practice techniques and software. Woodside has requested further information from the consultants on how Shark Bay hydrodynamics are resolved in the model and will communicate to Malgana once received
    - Woodside is investigating options for Indigenous Ranger hydrocarbon spill response training and capability. Woodside intends to work on this collaboratively with spill response agencies, Traditional Owners and industry
    - Existing emergency response arrangements that help protect the environment would trigger notification of Traditional Owners and other relevant stakeholders based on the spill's trajectory at the time of the spill
    - Woodside proposed another meeting to discuss opportunities for rangers and Indigenous people, noting that Woodside will contact Malgana by phone to arrange details
    - Woodside is able to receive feedback in any format of Malgana's choice. Woodside offered to provide resources to Malgana to obtain expert advice on proposed activities for which Malgana is a relevant person, beyond that which has already ben received in the course of preparing the EP. A suggested list of experienced and reputable industry environmental consultants was provided.
    - Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.
    - Woodside provided responses to questions noted from the meeting that were not related to the proposed activity.

        Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
During face-to-face engagement, Malgana requested further information on topics related to this proposed activity which was responded to during the meeting: • Ability for infrastructure to withstand seismic activity • Spill response arrangements Malgana Aboriginal Corporation indicated that they have particular interest in sea grasses, stromatolites and microbial mats. The Malgana Aboriginal Corporation expressed a desire for ongoing engagement and partnership. The Malgana Aboriginal Corporation raised feedback and request for further information on the Scarborough project more broadly which will be provided as part of ongoing engagement.	Malgana Aboriginal Corporation has had reasonable opportunity to engage in consultation Environmental sensitivities that Malgana Aboriginal Corporation noted as having particular interest within Shark Bay are not predicted to be impacted by the worst-case credible scenario, as shown in **Figure 4-14** and **Table 6-17.** Consultation has not identified any other groups or individuals relevant to communally held functions, activities or interests Woodside engages in ongoing consultation throughout the life of an EP. 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 7.6**).	Woodside considers the measures and controls descried within this EP address the potential impact from the proposed activities on Malgana Aboriginal Corporation functions, interests or activities. Based on the engagement to date, no additional controls have been identified
Nanda Aboriginal Corporation		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** 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 regards to their native title rights. No native title has been recognised over the Project Area, however YMAC is identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks. • On 7 July 2022, Woodside met with YMAC to request advice on the appropriate cultural authorities for the Scarborough project area, including but not limited to the scope of this EP and nearby marine parks. • On 20 January 2023, Woodside emailed Nanda via the representative body Yamatji Marlpa Aboriginal Corporation (YMAC) advising of the proposed activity (Appendix F, reference 1.113) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a		

summary overview fact sheet. The email requested information on the interests that Nanda and its members may have within the EMBA, information on how Nanda would like to engage, and requested that Nanda provide information to members as required.

- On 1 February 2023, Woodside emailed Nanda /YMAC to follow up on the information provided (Appendix F, reference 1.131). Woodside advised it would like to be able to speak with the relevant representative to ensure that Nanda are receiving the relevant information and seek an understanding of whether it would like to discuss any of the information in more detail.

- On 3 February 2023, Nanda/YMAC emailed Woodside:
  - Nanda noted that it currently considers itself a 'relevant person', and would welcome consultation with Woodside.
  - Nanda noted the information sheets provided by Woodside and that the activities are not described in any detail and are also of a highly technical nature. The activities, and their impacts, are not familiar to the Nanda Board.
  - Nanda advised that in order to ensure Nanda Aboriginal Corporation is fully informed, and able to engage in meaningful consultation, the Nanda Board proposes the following:
    - Woodside attend a half-day (or full day, if that is Woodside's preference), workshop with Nanda to explain to the Nanda Board the proposed activities and the EP process; and
    - if, after the presentation Nanda Aboriginal Corporation still considers itself a relevant person, provide funds to Nanda Aboriginal Corporation:
      - to engage an expert(s) (such as environmental scientist and/or marine scientist) to advise the Nanda Board about the impact of the proposed activities; and
      - draft an appropriate response for Woodside to include in the EP.
  - Nanda proposed that as next steps it prepares can prepare a budget and look to arrange a date for Woodside to meet with the Board.
  - Nanda noted that this initial meeting does not in itself constitute 'consultation' on the EP as contemplated by the Guide or other applicable law.
- On 10 February 2023, Woodside emailed Nanda/YMAC:
  - Woodside advised that welcomes the opportunity to meet with Nanda to establish a relationship and requested an estimate and Nanda's preferred meeting date(s) at its earliest convenience.
  - Woodside advised it would be pleased to meet at a location that is suitable to Nanda and in funding this meeting would seek to receive some initial feedback from Nanda about their views of the proposed activities.
  - Woodside advised it consider requests to fund independent experts on a case-by-case basis. We note an expert would need to be agreed by Nanda and Woodside and be an expert in oil and gas environmental management in the marine context.
  - Woodside noted it plans to send Nanda consultation information on a further three EPs shortly for Nanda's consideration and there will be more scheduled over the course of the year. Woodside will be sending separate emails for each of these EPs.
  - Woodside requested that in anticipation of Woodside and Nanda meeting, if there is an opportunity for Woodside to meet with YMAC / Nanda representatives prior to the meeting, so that Woodside can best prepare, it would be most grateful for that opportunity.
- On 7 March 2023, Nanda/YMAC emailed Woodside to advise it would revert back shortly with a cost estimate and proposed dates.
- On 13 March, Woodside spoke with Nanda/YMAC legal representatives about consultation meeting coordination.
- On 17 March 2023, Woodside emailed Nanda/YMAC following up for a date, cost estimate and logistical details for a meeting.

- Woodside requested on whether a date and budget has been confirmed for a meeting with Nanda and to notify it of additional EPs for consideration by the Nanda Board.

- On 23 March 2023, Nanda/YMAC responded inviting Woodside to meeting the Board of Directors on 19 April in Geraldton.
- On 23 March 2023, Woodside emailed Nanda/YMAC accepting the invitation and requesting confirmation of location.
- On 29 March 2023, Nanda/YMAC emailed reqarding budget details regarding the meeting.
- On 19 April 2023, Woodside met with directors and other representatives from Nanda Aboriginal Corporation in Geraldton:
    - Woodside provided background on Woodside and explained the geographical location of the proposed activity relevant to Nanda.
    - Woodside described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
    - Nanda asked whether Woodside has ever had an oil spill. Woodside said that we have had small spills but nothing that had lasting impact, and while worst case spills will be discussed today we have not had anything close to this scale happen before.
    - Nanda asked whether everything we put in the water will be removed, Woodside responded that this is correct except for instances where removing it would cause worse environmental damage such as buried anchors.
    - Nanda asked whether our activities are resistant to cyclones, Woodside responded that while some of our assets would continue operating the execution activities such as seabed intervention and pipelay would be moved away and made safe.
    - Nanda asked about control measures to avoid impacts to migratory whales, Woodside described control measures intended to be in place for the activity.
    - Nanda asked for detail on oil spill response particularly shoreline impact, Woodside described hydrocarbon spill preparedness, emergency planning and the various response techniques.
    - Woodside provided an overview of the broader Scarborough Project and overview of activities.
    - Woodside described the proposed seabed installation activities, using visual aids and a video:
        - Nanda asked about decommissioning concrete gravimetry structures, Woodside responded that the law is base case removal of everything and the gravimetry structures are designed to be removed at the end of their useful life
        - Woodside described the planned and unplanned risks/impacts and discussed the EMBA for the activity:
        - Nanda asked about greenhouse emission reduction activities, Woodside responded that for this activity it is mainly to do with minimising vessel fuel and using more efficient vessels.
        - Woodside noted this concluded the Scarborough section of the meeting and called for any further questions or feedback. None were received.
        - Woodside provided personal contact details for further feedback.
- On 18 May 2023, Woodside emailed Nanda:
    - Woodside thanked Nanda for the consultation meeting and their careful consideration of the matters presented
    - Woodside acknowledged and respects that Nanda have interests in the EMBA and noted that we want to ensure impacts are as minimal as reasonably practicable.
    - A high level overview of presented topics was provided.

○ In response to a question raised at the meeting, Woodside confirmed it makes the final report re findings of its water quality monitoring program related to the Scarborough Seabed Intervention and Trunkline Installation publicly available. ○ Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA. ○ Woodside provided responses to questions noted from the meeting that were not related to the proposed activity.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
During face-to-face engagement, Nanda requested further information on topics related to this proposed activity which was responded to during the meeting: - Decommissioning - Hydrocarbon spill response, potential shoreline impact and emergency planning - Impacts to whales - Spill response arrangements.	Woodside continues to engage Nanda in relation to feedback following the 19 April 2023 Board meeting. No material issues or concerns related to the proposed activity were raised during consultation to date. Woodside invited further feedback in accordance with Woodside's approach to ongoing consultation. Interests that Nanda raised in the consultation meeting, namely decommissioning, hydrocarbon spill risk and preparedness and impacts to whales are valid environmental aspects. Consultation has not identified any other groups or individuals relevant to communally held functions, activities or interests Nanda has had a reasonable opportunity to participate in consultation 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 7.6**).	Interests that Nanda raised in the consultation meeting, namely decommissioning, hydrocarbon spill risk and preparedness and impacts to whales and are adequately addressed and managed to ALARP in the EP. Woodside considers the measures and controls descried within this EP address the potential impact from the proposed activities on Nanda's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.
Ngarluma Yindjibarndi Foundation Limited (NYFL)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** • On 23 September 2022, Woodside emailed NYFL advising of the proposed activity and provided a Consultation Information Sheet and Consultation FAQ (Appendix F, reference 1.52). • On 26 September 2022, NYFL emailed Woodside and stated NYFL would like to understand more about the proposed activities and mitigations. • On 27 September 2022, Woodside emailed and phoned NYFL seeking a time to meet. Woodside suggested it could then look to respond in detail in early October to give NYFL enough time to respond if there are further concerns. • On 4 October 2022, NYFL emailed Woodside:		

- NYFL thanked Woodside for taking the time to talk through ways in which complex information such as that which relates to EPs can be appropriately communicated to NYFL and its TO board and members.
- NYFL advised that as discussed, at present the language and communication approach in EPs, such as that sent to NYFL on 23 September 2022, is not appropriate for NYFL. As such NYFL cannot confidently say it is OK with the activity.
- NYFL also thanked Woodside for communicating to the business that NYFL is a 'relevant person' for activity that relates to potential and existing offshore activity for the areas and project discussed.

- On 20 March 2023, Woodside emailed NYFL about the activity providing further information (Appendix F, reference 1.210), and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
In consultation in the course of preparing the EP since September 2022, NYFL has not provided feedback, objections or claims in response to the information provided	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 7.6**).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on NYFL's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.

Woodside Heritage Quarterly Meetings

Woodside convenes a quarterly meeting of Traditional Custodian representatives from the Representative Aboriginal Corporations involved in historical native title claims over the Burrup Peninsula, including NAC and WAC. Individual attendees are nominated by their representative Aboriginal Corporations.
Copies of slides are made available to representative Aboriginal Corporations for the general awareness of members who were not able to attend individual meetings.

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 19 March 2021 an overview of the Scarborough project was provided to attendees along with an overview of the pipeline licence schedule.
- On 10 June 2021 an overview of the Scarborough project was provided to attendees along with a schedule for project activities.
- On 20 September 2021 an overview of the Scarborough project was provided to attendees along with a schedule for project activities.
- On 13 December 2021 an overview of the Scarborough project was provided to attendees along with a summary of consultation conducted.

- On 28 March 2022 an overview of the Scarborough project was provided to attendees targeting correction of misinformation in the community about the project footprint.
- On 17 June 2022 an overview of the Scarborough project was provided to attendees. Attendees were advised on the status of the EP.
- On 25 October 2022 an overview of the Scarborough project was provided along with summaries of the scope, content and expected timeframes for four EPs including this EP
- On 21 March 2021 an overview of heritage works undertaken for the Scarborough Project was provided.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
Across all meetings of the Woodside Heritage Quarterly Meetings there has been a general interest in how this project interacts with other proposed developments by Woodside and others. Participants generally had an awareness of the planned project through other sources (particularly through ethnographic survey participation). Participants have not made any response relating to activities in Commonwealth waters.	Woodside continues to engage participants on a quarterly basis and through direct consultation where applicable. Copies of slides are made available to representative Aboriginal Corporations for the general awareness of members who were not able to attend individual meetings. 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 7.6).	Based on the engagement to date, no additional controls have been identified.

Native Title Representative Bodies

Yamatji Marlpa Aboriginal Corporation (YMAC)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

Historical Engagement

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 regards to their native title rights. No native title has been recognised over the Project Area, however YMAC is identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks.

- On 7 July 2022, Woodside met with YMAC to request advice on the appropriate cultural authorities for the Scarborough project area, including but not limited to the scope of this EP and nearby marine parks.
- Woodside described the Scarborough Project and its footprint and gave an overview of indigenous parties consulted.
- Woodside noted that YMAC was identified in the North West Marine Parks Network Management Plan as the contact for identifying cultural values in nearby Australian Marine Parks. Woodside sought to understand if the cultural values of the nearby Gascoyne Marine Park may extend into the offshore Scarborough project areas.
- Woodside requested advice on how best (in addition to work completed) to identify any cultural values in the Marine Parks and in the broader project footprint.
- YMAC requested Woodside provide the relevant detailed information relating to the location and extent of the project.

Ensuring Sufficient Information and Sufficient Time

- On 8 July 2022, Woodside emailed YMAC providing the requested information including a link to the factsheet relevant to this EP.
  - Woodside advised it would like to establish a process to cross check its understanding of cultural and spiritual values associated with proposed offshore development and surrounding areas. Woodside again noted that YMAC had been listed as the Native Title Representative body in the North West Marine Parks Network Management Plan for nearby Australian Marine Parks, and would therefore like to confirm cultural values of these marine parks don't extend into Woodside's areas of interest.
  - Woodside provided an extract from a related Scarborough EP which detailed further context and Woodside's current understanding of cultural and spiritual values associated with proposed offshore development and surrounding areas.
- On 19 July 2022, Woodside sent a follow up email to YMAC on the subject of the 8 July 2022 email.
- On 19 July 2022, YMAC responded to Woodside:
  - YMAC stated the area Woodside has identified requires correspondence directed to Murujuga Aboriginal Corporation (MAC) and Ngarluma Aboriginal Corporation (NAC).
  - The extent to which each corporation has interests specifically over the area of this EP was not advised, but both have been involved in assessments of cultural values as detailed below. YMAC does not act for either corporation.
- On 13 March 2023, Woodside emailed YMAC as to whether YMAC considers itself a 'relevant person' under subregulation 11 A (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 adjacent to the environment that may be affected (EMBA) of a particular activity.
- On 20 March 2023, YMAC replied to confirm that in its view it is a 'relevant person' under subregulation 11 A (1) 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. YMAC does not intend to provide substantive comment on the content of EPs.
- On 20 March 2023, Woodside emailed YMAC to thank it for its reply and to advise that that this assessment would be included in Woodside's EPs.

On 20 March 2023, YMAC emailed Woodside confirming that it is appropriate to use the assessment in the EPs.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
YMAC has advised that the most appropriate stakeholders for the Scarborough project generally are Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation who are not represented by YMAC. YMAC has provided feedback that in its view it is a 'relevant person' under subregulation 11 A (1) 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.	YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate representing the cultural rights of a Traditional Custodian Community but exist to assist native title claimants and holders. YMAC is identified in the North-west Marine Parks Network Management Plan 2018 (DNP, 2018) as the Native Title Representative Body, noting no marine parks overlap the Operational Area. Woodside has approached YMAC to confirm the best approach to confirm additional cultural values (if any) within the Operational Area. Woodside has consulted with YMAC in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation, and it has responded that it does not intend to provide substantive comment on the content of EPs YMAC has had reasonable opportunity to participate in consultation. 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 7.6**).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on YMAC's functions, interests or activities. Based on the engagement to date, no additional controls have been identified.

Historical cultural heritage groups or organisations
Western Australian Museum (WAM)
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 1 February 2023, Woodside emailed WAM advising of the proposed activity (Appendix F, reference 1.137) and provided an updated Consultation Information Sheet and State Shipwrecks information (Appendix F, reference 1.138).
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.182).
- On 3 March 2023, WAM emailed Woodside:
  - WAM advised it had reviewed the documents relating to the proposed activity.
  - WAM advised that its feedback should be reviewed in conjunction with the Commonwealth Government's 'Underwater Cultural Heritage (UCH) Guidance for Offshore Developments' regarding UCH assessments, the potential for finding as yet unlocated UCH and proponents' legal responsibilities and Duty of Care requirements. (https://www.dcceew.gov.au/parks-heritage/heritage/publications/underwater-heritage-guidance-offshore)
  - WAM advised that while a list of known, located UCH sites in the broader has been assessed and provided in relation to the Environment that May Be Affected (EMBA), of more direct concern for direct impact is the potential for as yet unlocated UCH to exist in the extensive areas of seabed to be impacted by trenching, borrow ground dredging, spoil grounds and other seabed interventions such as anchoring etc.
  - WAM advised that apart from mention of an ethnographic survey for Indigenous UCH, there is no indication that any other desktop or physical assessment for UCH has been undertaken in any of the seabed areas to be impacted, that is required to make a UCH Impact Assessment.
  - WAM recommended that a UCH survey is carried out by a qualified and experienced maritime archaeologist(s). This may initially be a desktop survey based on existing data, if the resolution and coverage is sufficient. Further physical investigation may be required to ensure any seabed impact areas do not contain UCH that could be impacted.
  - WAM recommended that all project managers, vessel, plant and ROV operators should be advised of the potential to encounter visible or buried UCH, and of their statutory reporting requirements under both the Commonwealth Underwater Cultural Heritage Act 2018 (Australian and Commonwealth waters, including State waters for historic shipwrecks), and Maritime Archaeology Act 1973 (State waters) to report any discoveries of UCH to the WA Museum.
  - WAM recommended there should be procedures in place should any UCH be discovered in the course of the works.
  - WAM recommended that the documents should be updated to include 'Impact to Underwater Cultural Heritage' as a Potential Impact/ Risk as a result of seabed disturbance, with corresponding Risk Mitigation and Management Measures.
- On 20 March 2023, Woodside emailed WAM:
  - Woodside referred to WAM's correspondence dated 3 March 2023 and noted that WAM's input has provided Woodside with an understanding of WAM's interest and concerns in relation to the proposed activity.
  - Woodside provided a detailed attachment of responses to the points raised in WAM's correspondence on 3 March 2023.
  - Woodside reiterated its updated Consultation Information Sheet for the Subsea EP provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. Woodside provided a link to the fact sheet on the Woodside website.
  - Woodside advised it welcomes continued feedback from stakeholders in relation to its activities and ongoing operations.
- Woodside provided a response to specific points raised by WAM in their correspondence dated 3 March 2023 as follows:
  - The seabed bathymetry and other characteristics have been identified and characterised through various geophysical and environmental surveys over the past 13 years (refer to the Scarborough OPP). It is intended that further surveys will be carried out prior to commencement of infrastructure installation, during scope execution and after the activities are complete (these are described and risk assessed in the EP).

- The Subsea EP activity areas (permits WA-61-L and WA-62-L) have been the subject of dedicated seabed surveys in 2005 and 2018, which included acquisition of coincident high resolution multibeam bathymetry, side scan sonar and sub-bottom profiler data. The development area was also subject to multi-AUV (Autonomous Underwater Vehicle) high resolution survey in 2018. This geophysical data maps the seabed in detail including natural features and UCH and has been fully analysed and interpreted by specialist geophysicists.
- Given the extensive surveys that have been carried out within permit areas WA-61-L and WA-62-L, planned pre-installation surveys as described in the EP and low likelihood of UCH presence in the Operational Area(s), a dedicated UCH survey by a qualified maritime archaeologist is not required.
- The likelihood of encountering unlocated UCH in this area is considered remote.
- UCH as it applies to the Scarborough Project has been determined to be most relevant to the nearshore activities, and as such is not addressed with a performance standard or management actions in the Subsea EP.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
WAM has provided feedback, objections and claims relating to: ● The potential for unlocated UCH to exist in the areas of seabed to be impacted by the proposed activities. ● Additional desktop and assessment survey work required to support UCH Impact Assessment. ● Statutory reporting and procedural requirements relating to the discoveries of UCH. ● Consultation / EP documentation updates to include potential impacts/risks, and corresponding mitigation and management measures, on UCH from the proposed activities.	WAM's feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate. Given the extensive surveys that have been carried out within permit areas WA-61-L and WA-62-L, planned pre-installation surveys as described in the EP and low likelihood of UCH presence in the Operational Area(s), a dedicated UCH survey by a qualified maritime archaeologist is not required. The likelihood of encountering unlocated UCH in this area is considered remote. UCH as it applies to the Scarborough Project has been determined to be most relevant to the nearshore activities, and as such is not addressed with a performance standard or management actions in the Subsea EP. The activities within the Subsea EP do not include trenching, borrow ground dredging or the use of spoil grounds, so these activities do not pose any risk to UCH. Woodside responded to the DPLH's recommendation to notify WAM in the event of a maritime archaeological incident. No amendments have been made to the EP in relation to any of the feedback, objections or claims raised. Woodside has provided responses to feedback received as shown above.	The EP demonstrates that there are no known underwater heritage sites, including shipwrecks, within the Petroleum Activities Area and identifies that there are no credible impacts to the values of any underwater heritage, including shipwrecks, as a result of planned activities (**Section 4.9.1**). Any underwater heritage sites, including shipwrecks, within the EMBA would be located on the seabed; in the event of an unplanned hydrocarbon spill there would be no impacts to these sites. Woodside has consulted WAM in the course of preparing this EP. Woodside has assessed the claims or objections raised by WAM. No additional measures or controls have been put in place. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on WAM's functions, interests or activities.

	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

Local government and community representative groups or organisations		
Karratha Community Liaison Group (KCLG)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside presented to the KCLG (Appendix F, reference 1.26). – Woodside provided an overview of the proposed activity (including displaying a map of the Operational Area) and advised of activity timeframes and consultation feedback dates. ● On 21 September 2022, Woodside emailed the KCLG advising of the proposed activity (Appendix F, reference 1.27) and included copy of the presentation pack, a Consultation Information Sheet and Consultation FAQ. ● On 12 October 2022, Woodside sent a follow up email (Appendix F, reference 1.61). ● On 27 January 2023, Woodside emailed the KCLG advising of the proposed activity (Appendix F, reference 1.129) and provided an updated Consultation Information Sheet. ● On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.176). ● On 24 February 2023, the Pilbara Port Authority responded and noted that as the activity occurs outside of the Port waters it has no comments.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback was received from the KCLG with the exception of the Pilbara Port Authority, which advised it had no comments on the proposed activity. Whilst feedback has been received, there were no objections or claims.	Woodside notes that no feedback was received from the KCLG with the exception of the Pilbara Port Authority, which advised it had no comments on the proposed activities. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has	No additional measures or controls are required.

	been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

Exmouth Community Reference Group (ECRG)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 7 April 2022, Woodside presented to the ECRG (Appendix F, reference 1.211)

Woodside provided an overview and update on the Scarborough Project, which included reference to the proposed activities for this EP.

- On 17 November 2022, Woodside presented to the ECRG (Appendix F, reference 1.103)

Woodside provided consultation information on related petroleum activities for the Scarborough Project, which included reference to the proposed activities for this EP.

- On 1 February 2023, Woodside emailed the ECRG advising of the proposed activity (Appendix F, reference 1.135) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.178).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

Other non-government groups or organisations

Conservation Council of WA (CCWA)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022 Woodside emailed CCWA advising of the proposed activity (Appendix F, reference 1.33) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.198).

- On 6 February 2023, Woodside emailed CCWA with an update on the proposed activity (Appendix F, reference 1.157) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.190).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

Greenpeace (GAP)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

Historical Engagement

- On 1 June 2022, Woodside met with GAP representatives to discuss Woodside's broader business, including the Scarborough development.

Ensuring Sufficient Information and Sufficient Time

- On 21 September 2022, Woodside emailed GAP advising of the proposed activity (Appendix F, reference 1.41) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022 Woodside sent a follow-up email (Appendix F, reference 1.91).
- On 21 October 2022, GAP emailed Woodside requesting more time to finalise its feedback.
- On 26 October 2022, GAP emailed Woodside and provided a letter containing feedback on the proposed activity. The letter contained feedback, claims and objections relating to the proposed activity.
  - Relevant person status and consultation process
  - Provision of documents supporting the OPP.
  - Additional information required relating to description of the titleholder, EP process, description of activity, description of the existing environment, description of stakeholder consultation, environmental risk assessment, performance outcomes, standards and measurement criteria and implementation strategy.
  - GAP requested a list of third-party documents that were referenced in the Scarborough Offshore Project Proposal but do not appear to be publicly available and that GAP believe may be relevant to the activities outlined in the Information Sheet.

  - Indirect Impacts of GHG emissions
  - No new information was received requiring additional specific mitigation measures or controls.
- On 20 March 2023, Woodside emailed GAP and attached a detailed table of responses to address specific claims and objections in 26 October 2022 correspondence regarding the proposed activity, where appropriate:
  - Woodside will comply with the requirements set out in Reg 11A of the Environment Regulations in relation to the consultation process for this EP.
  - Woodside engages in ongoing consultation with stakeholders throughout the life of an EP. Feedback and comments received continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation.
  - The Offshore Project Proposal (OPP) is informed and supported by an extensive list of literature and studies, with many publicly available. The relevant information from the reports is presented within the OPP to support the relevant impact and risk evaluation.
  - Woodside confirms concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Subsea EP. Woodside confirms the Subsea EP assesses both direct and indirect impacts and risks associated with the PAP, having regard to the nature and scale of the proposed PAP. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the Subsea EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the Subsea EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the subsea activity (i.e., fuel combustion from project vessels) are considered in the EP which will be made publicly available once submitted and accepted by NOPSEMA.
  - Woodside also attached the updated Consultation Information Sheet.
- On 3 April 2023, GAP emailed Woodside:
  - GAP reiterated its feedback, objections and claims from 26 October 2022 relating to:
    - Relevant person status and consultation process
    - Adapting the consultation process to Greenpeace's needs
    - Form of information and additional information requested
    - GAP requested a copy of the EP once it has been drafted.
- On 16 May 2023, Woodside emailed GAP to address specific claims and objections contained in its 3 April 2022 correspondence regarding the proposed activity, where appropriate:
  - The purpose of the Consultation Information Sheet is to initiate feedback from persons or organisations who are interested in Woodside's activities. This initial feedback is then used to inform the drafting of Woodside's environment plans and relevant controls. The Consultation Information Sheet provides information in relation to the activity, planned and unplanned risks and relevant measures and controls.
  - The process for preparing the Subsea EP and related consultation on Woodside's activities is an iterative one. Woodside acknowledges consultation with GAP on this proposed activity will be ongoing.
  - Once the Subsea EP has been submitted to NOPSEMA and enters the assessment phase, it will be made publicly available on NOPSEMA's website. GAP will then have the opportunity to review the entire Subsea EP. Following publication of the Subsea EP, feedback is welcomed and received across the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance.
  - Woodside continues to invite GAP to provide feedback to allow Woodside to consider the potential impacts and risks of the Subsea EP activities on its functions, interests and activities and what Woodside can do to mitigate those impacts.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
GAP has responded and provided feedback, objections and claims relating to: ● Relevant person status and consultation process ● Indirect Impacts of GHG emissions GAP requested further information: ● Additional information required relating to description of the titleholder, EP process, description of activity, description of the existing environment, description of stakeholder consultation, environmental risk assessment, performance outcomes, standards and measurement criteria and implementation strategy. ● GAP requested a list of third-party documents that were referenced in the Scarborough Offshore Project Proposal but do not appear to be publicly available and that GAP believe may be relevant to the activities outlined in the Information Sheet. ● GAP requested a copy of the EP once it has been drafted.	Woodside assessed the feedback on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate. Woodside considers information in the EP including summaries of modelling and studies relating to the PAP to be sufficient to address feedback, objection and claims received as well as requests for additional information. No amendments have been made to the EP in relation to any of the feedback, objections or claims raised. Woodside has provided responses to feedback received as shown above. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has consulted GAP in the course of preparing this EP. Woodside has assessed the claims or objections raised by GAP. No additional measures or controls have been put in place. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on GAP's functions, interests or activities.
Australian Conservation Foundation (ACF)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.		

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed ACF advising of the proposed activity (Appendix F, reference 1.29) and provided a Consultation Information Sheet and Consultation FAQ.
- On 27 September 2022, ACF / EDO responded via email on a related proposed activity and advised it would like to meet with Woodside to discuss the proposed activity. The ACF / EDO requested most recently submitted version of the environment plan.
- On 29 September 2022 Woodside responded to ACF offering a meeting on 10 October 2022.
  - Woodside advised it would brief ACF on the Scarborough Project and associated activities.
  - In the meeting Woodside will also confirm information already provided on topics raised by ACF in correspondence and during consultation (relating to other proposed activities). Woodside encouraged ACF to discuss issues ACF has in relation to the environment plans with regard to ACF's functions, interests and activities.
  - In the email from EDO, copies of the most recently submitted EPs were requested. It was suggested those might assist ACF to prepare for the meeting and might assist ACF to assess possible consequences of the proposed activity on its functions, interests and activities. Given the amount of correspondence received from ACF, ACF's public campaign and current court proceedings regarding the Scarborough Project initiated by ACF, it appeared that that ACF is already adequately well prepared to outline its functions, interests and activities regarding Woodside's activities.
  - Woodside confirmed ACF has already been provided with the Offshore Project Proposal (OPP) for the Scarborough Project (public comment period 5 July - 30 August 2019) as well as full versions of each of the relevant EPs and summary information on each of the activities proposed under each of the relevant EPs. Woodside also confirmed the nature of each of the proposed activities (seismic, drilling and completions, seabed intervention and trunkline installation activities), as well as the location and description of these activities as set out in each of the EPs and summary information documents has not changed and remains the same in the recently submitted versions of the EPs.
  - Woodside advised that additional information on various topics has also been provided to ACF in the course of consultation on the EPs and, where that has been incorporated in updated versions of the EPs, that has been made clear to ACF.
- On 5 October 2022 ACF responded and provided its availability to meet via video conference.
- On 6 October 2022, Woodside emailed ACF details pertaining to the meeting and confirming the meeting date of 11 October 2022.
- On 11 October 2022, Woodside provided a briefing to ACF via video conference on the proposed activity as well as other Scarborough Project activities and their associated EPs. The briefing covered:
  - Scarborough project overview
  - Description of specific proposed activities (including this proposed activity) along with a map of the OA.
- On 11 October 2022, Woodside emailed ACF to thank them for the meeting. At ACF's request, Woodside resent the consultation information it provided to ACF on 21 September 2022 and followed up with the request for feedback.
- On 20 March 2023, Woodside emailed ACF:
  - Woodside thanked ACF for its discussion on 11 October 2022 on each of the activities proposed under its Scarborough Environment Plans (EPs).
  - Woodside noted ACF's input provided us with an understanding of ACF's interest and concerns in relation to the relevant Scarborough EPs.
  - Woodside attached an updated Consultation Information Sheet and advised that revisions of all Woodside's EPs (including the Subsea EP) will be available on the NOPSEMA website once submitted and accepted.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
ACF has requested a full copy of recently submitted EPs (relating to other Scarborough activities) for its review in addition to the consultation information provided. ACF has met with Woodside and provided additional consultation information on the broader Scarborough activities, including this proposed activity. Whilst feedback has been received, there were no objections or claims.	At the time of meeting with ACF on 11 October 2022, Woodside had not yet submitted the draft EP for this proposed activity to NOPSEMA as it was in the process of developing the EP as well as consulting with ACF on a number of other Scarborough activities. Woodside has advised that revisions of all Woodside's EPs (including the Subsea EP) will be available on the NOPSEMA website once submitted and accepted. Additional information on various topics has been provided to ACF in the course of consultation on this EP. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on ACF's functions, interests or activities. No additional measures or controls are required.
The Wilderness Society (TWS)		
Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below. **Summary of information provided and record of consultation:** ● On 21 September 2022, Woodside emailed TWS advising of the proposed activity (Appendix F, reference 1.35) and provided a Consultation Information Sheet and Consultation FAQ. ● On 6 October 2022, Woodside provided a briefing to TWS on the proposed activities and the broader Scarborough Project. The briefing covered: Scarborough project overview Description of specific proposed activities (including this proposed activity) along with a map of the OA. ● On 13 October 2022, Woodside sent a follow-up email (Appendix F, reference 1.88). ● On 17 October 2022 Woodside emailed TWS: – Woodside attached a meeting summary which included responses to address specific claims and objections raised on the proposed activity, where appropriate. The following topics were covered relevant to the broader Scarborough activities, including this proposed activity: – The decision to consult The Wilderness Society with regard to Woodside's proposed activities for the purpose of understanding how Woodside may mitigate any adverse impacts its activities may have on The Wilderness Society's functions, interests and activities;		

- The work undertaken to understand marine fauna populations and their migration patterns in relation to Woodside's proposed activities and the controls in place to mitigate any potential impacts, including, but not limited to, acoustic surveillance and marine fauna observers;

In response to questions raised by The Wilderness Society during the meeting regarding perceived environmental impacts, Woodside confirmed that:

- A significant number of scientific studies and findings informed the Scarborough OPP and subsequent EPs, including Woodside-supported studies undertaken by the Australian Institute of Marine Science and The University of Western Australia;
- Scientific studies and modelling were also used to inform the impact assessment in relevant EPs which demonstrate the activities (i.e., seismic acquisition) will be performed in a manner that prevents injury to whales, and minimises the potential for biologically significant behavioural disturbance;
- Continuous consideration of cumulative impacts for the proposed activities under each EP, as was previously considered for the OPP; and
- The Scarborough pipeline and subsea infrastructure is designed to be removed from the seabed, which would be the subject of a future decommissioning EP and approval.
- Regarding The Wilderness Society's queries in relation to Woodside's engagement with Traditional Owners on the relevant EPs, Woodside confirmed it has undertaken extensive engagement with the relevant Traditional Owners and Traditional Owner representative groups with respect to the proposed activities. Woodside confirmed this engagement included archaeological and ethnographic surveys, which have informed the Scarborough EPs.
- In relation to The Wilderness Society's query regarding zooplankton and any potential impacts from the proposed activities on the broader food chain, Woodside confirmed scientific studies and modelling have been used to assess and ensure an ALARP and acceptable approach to activities.
- Woodside noted that no new concerns or queries have been raised by The Wilderness Society directly to Woodside that have not already been addressed by Woodside in each of the EPs discussed.

- On 6 February 2023, Woodside emailed TWS with an update on the proposed activity (Appendix F, reference 1.159) and provided an updated Consultation Information Sheet
- On 22 February 2023, Woodside sent a follow-up email (Appendix F, reference 1.192).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
Woodside has received feedback from TWS during the course of consultation on a range of Woodside EPs covering the broader Scarborough activities. Feedback was predominantly related to impacts from seismic activities, but broader feedback, objections or claims relating to the proposed activity included: Mitigation of adverse impacts Woodside's activities may have on TWS' functions, interests and activities	Woodside assessed the feedback on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate. Woodside has outlined its existing processes relating to the topics raised by TWS during consultation. No amendments have been made to the EP in relation to any of the feedback, objections or claims raised. Woodside has provided responses to feedback received as shown above. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside	Woodside has consulted TWS in the course of preparing this EP. Woodside has assessed the claims or objections raised by TWS. No additional measures or controls have been put in place. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on TWS's functions, interests or activities.

Work undertaken to understand marine fauna populations and their migration patterns ● Positioning of infrastructure ● Supported scientific studies ● Cumulative impacts ● Decommissioning ● Engagement with Traditional Owners ● Impacts to Zooplankton	will apply its Management of Change and Revision process (see **Section 7.6**).	

Say No to Scarborough Gas (SNTSG)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed SNTSG advising of the proposed activity (Appendix F, reference 1.36) and provided a Consultation Information Sheet and Consultation FAQ.
- On 4 October 2022, Woodside emailed SNTSG confirming its availability to meet on 10 October 2022 regarding a number of Scarborough activities.
- On 5 October 2022, SNTSG emailed Woodside advising it was unavailable to meet on 10 October 2022 and requested to meet on 13 October 2022.
- On 6 October 2022 Woodside emailed SNTSG confirming its availability to meet on 13 October 2022.
- On 11 October 2022 SNTSG emailed Woodside in response to other Scarborough EP consultation and referenced that its main focus of the scheduled meeting on 13 October 2022 was to discuss a separate specific proposed Woodside activity.
  - SNTSG noted that more information about all of the EPs will be valued but SNTSG will require more time after the meeting to give feedback and go through a thorough consultation process.
- On 11 October 2022 Woodside emailed SNTSG:
  - Woodside confirmed the purpose of the meeting is to provide context and an overview on the upcoming activities for the Scarborough Project to allow for feedback and information to be provided as relevant.
  - Woodside advised will discuss a number of Scarborough EPs.
  - Woodside encouraged Say No to Scarborough Gas to share any interests, claims or concerns it has in relation to these EPs to inform Woodside of appropriate measures we may take to mitigate any adverse impacts Woodside's activities may have.
- On 12 October 2022, Woodside followed-up on the 21 September 2022 email (Appendix F, reference 1.63).
- On 12 October 2022 SNTSG emailed Woodside and advised it will endeavour to give as much feedback as possible on the day and as soon it can after the 13 October 2022 meeting.

- On 13 October 2022, Woodside provided a briefing to SNTSG on the proposed activities and the broader Scarborough Project. The briefing covered:

Scarborough project overview

- Description of specific proposed activities (including this proposed activity) along with a map of the OA.
- During the meeting SNTSG noted it will provide Woodside, early in the week commencing Monday, 17 October 2022, with a summary of concerns it has in relation to the relevant EPs.
- On 14 October 2022 Woodside emailed SNTSG:
  - Woodside acknowledged the EPs discussed during the meeting and noted the date of week commencing 17 October 2022 for SNTSG to provide feedback.
  - At the request of SNTSG, Woodside attached consultation information on a related Scarborough EP.
  - Woodside encouraged SNTSG to visit the Consultation Activities page of the Woodside Energy website, where all Consultation Information Sheets can be located, and to sign up to the mailing list on the Consultation Activities page, enabling it to receive notifications when new Information Sheets are released
- On 16 November 2022, SNTSG emailed Woodside and included a letter: The letter contained a number of claims/objections relating to the proposed activity covering the following topics:
  - Community consultation
  - EPs are not consistent with existing conservation plans or ecological principles
  - Independence of participants in Environmental Risk and Impact Identification workshop
  - Emissions
  - Lighting
  - Ecosystem impacts
- On 20 March 2023, Woodside emailed SNTSG and included responses to address specific claims and objections raised during the 13 October 2022 meeting, and the 16 November 2023 correspondence regarding the proposed activity, where appropriate:
  - Woodside advised consultation requirements set out in Reg 11A of the Environment Regulations have been complied with in relation to the consultation process for the EPs Woodside detailed during its consultation meeting with SNTSG on 13 October 2022. Woodside's consultation process has continued to evolve based on ongoing Regulator feedback. Where feedback is received which informs Woodside of measures that it may take to mitigate the potential adverse environmental impacts from the Petroleum Activities Program (PAP), Woodside incorporates this feedback into its EP, and where appropriate, it will introduce additional controls to ensure risks are managed to ALARP and an acceptable level.
  - Woodside advised EPs are published initially on NOPSEMA's website and may change whilst under assessment prior to the final EP being accepted. Following the initial public comment period, an additional round of stakeholder Consultation Information Sheets and advertisements in local publications were issued during the development of the EP.
  - Woodside confirmed it has undertaken extensive engagement with the relevant Traditional Owners and Traditional Owner representative groups with respect to proposed activities. Woodside confirms this engagement included archaeological and ethnographic surveys, which have informed the Scarborough EPs.
  - Woodside confirmed it has not undertaken any of the activities which are the subject of environment approvals which are currently under assessment.
  - The PAP is carried out in a manner consistent with the principles of ecologically sustainable development (ESD) (as defined in Section 3A of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)).

- The Subsea EP provides an assessment of the relevant activities against the Blue Whale Conservation Management Plan, including relevant Environmental Performance Objectives (EPOs).
- The participants at the Environmental Risk and Impact Identification workshop were from a multi-disciplinary background, including external environmental consultants supporting the EP development, with extensive experience and understanding across all topics highlighted. The participants' breadth of knowledge, training and experience was sufficient to reasonably assure that the hazards that may arise in connection with the petroleum activity in this EP were identified.
- Woodside confirmed concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Subsea EP. Woodside confirmed the Subsea EP assesses both direct and indirect impacts and risks associated with the PAP, having regard to the nature and scale of the proposed PAP. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the Subsea EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the Subsea EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the subsea activity (i.e., fuel combustion from project vessels) are considered in the EP.
- Woodside confirmed the Subsea EP (Recovery Plan and Threat Abatement Plan Assessment) sets out the assessment that Woodside has undertaken to demonstrate that the PAP is not inconsistent with any relevant recovery plans or threat abatement plans. This includes a list of the objectives and (where relevant) the action areas of these plans, and also describes whether these objectives / action areas are applicable to government, the Titleholder, and/or the PAP.
- Woodside confirmed Routine Light Emissions associated with external lighting on Project Vessels from the subsea activity have been considered in the Subsea EP. For the purpose of preparing the Subsea EP, receptors that have important habitat within a 20 km radius of the Operational Area were considered for the impact assessment, based on recommendations of the National Light Pollution Guidelines for Wildlife Including Marine Turtles, Seabirds and Migratory Shorebirds (NLPG). The impact assessment determined that light emissions from project vessels will not result in an impact greater than a localised and temporary disturbance to marine fauna in the vicinity of the Operational Area, with no lasting effect to any species.
- Woodside confirmed the Subsea EP will provide a risk/impact assessment to all relevant ecological parameters.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
Following a briefing with Woodside, SNTSG has provided feedback, objections and claims relating to: ● Community consultation ● EPs are not consistent with existing conservation plans or ecological principles ● Independence of participants in Environmental Risk and Impact Identification workshop ● Emissions ● Lighting ● Ecosystem impacts	Woodside assessed the feedback on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate. Woodside has provided specific information from the EP to address feedback, objections and claims, as well as Woodside's consultation approach and methodology to identify relevant persons (see **Section 5.7**), noting the draft EP was not publicly available at the time of the meeting with SNTSG. No amendments have been made to the EP in relation to any of the feedback, objections or claims raised. Woodside has provided responses to feedback received as shown above. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has	Woodside has consulted SNTSG in the course of preparing this EP. Woodside has assessed the claims or objections raised by SNTSG. No additional measures or controls have been put in place. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on SNTSG's functions, interests or activities.

	been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

350 Australia (350A)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022 Woodside emailed 350A advising of the proposed activity (Appendix F, reference 1.43) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022 Woodside followed-up via email (Appendix F, reference 1.90).
- On 24 October 2022, 350A emailed Woodside to advise it had not yet had an opportunity to review the information and asked for an extension on the feedback date.
- On 24 October 2022, Woodside emailed 350A to advise that the feedback period for 350A had been extended to COB 28 October 2022.
- On 29 November 2022, Woodside emailed 350A to acknowledge that Woodside did not receive feedback by the extended deadline to assist informing the preparation of its environment plan. However, Woodside confirmed that it remains open to receiving feedback during the life of the project.
- On 6 February 2023, Woodside emailed 350A with an update on the proposed activity (Appendix F, reference 1.155) and provided an updated Consultation Information Sheet
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.188).

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	At 350A's request, Woodside provided additional time for feedback. No feedback has been received. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.

Australian Marine Conservation Society (AMCS)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed AMCS advising of the proposed activity (Appendix F, reference 1.32) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.92).
- On 6 February 2023, Woodside emailed AMCS with an update on the proposed activity (Appendix F, reference 1.156) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside followed-up via email (Appendix F, reference 1.189).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.

Sea Shepherd Australia (SSA)

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed SSA advising of the proposed activity (Appendix F, reference 1.38) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.94).
- On 6 February 2023, Woodside emailed SSA with an update on the proposed activity (Appendix F, reference 1.158) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside followed-up via email (Appendix F, reference 1.191).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of	No additional measures or controls are required.

	ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	

Other

[redacted], and/or, [redacted] and/or Save Our Songlines

Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in **Section 5.7.1** and below.

Summary of information provided and record of consultation:

Historical Engagement

2018 – September 2022

Woodside has engaged with the Ngarluma and Mardudhunera communities on the Scarborough project since 2018 through their representative organisations including Murujuga Aboriginal Corporation, Yaburara and Coastal Mardudhunera Aboriginal Corporation, Wirrawandi Aboriginal Corporation and Ngarluma Aboriginal Corporation. During these two-way discussions, in the three years leading up to until November 2021, Woodside was not made aware of any specific concerns of [redacted], [redacted] (Mardudhunera Traditional Owners) and [redacted] (Ngarluma Traditional Owner) around the Scarborough Project. The first time Woodside became aware of these concerns was via a number of public statements on Save Our Songlines websites and social media (November 2021).

After seeing the concerns, Woodside has met or attempted to meet with individuals involved in Save Our Songlines to discuss the Scarborough project area in other capacities on numerous occasions, including:

- On 15 December 2021, a meeting was held with MAC Board and Circle of Elders, including [redacted], to provide a project overview of Scarborough and Pluto Train 2 projects at the MAC office in Dampier.
- On 3 March 2022, a meeting was held with the [redacted] family, including an extended invitation to [redacted] to provide project and activity updates relating to Scarborough and Pluto Train 2 at Woodside office in Roebourne.
- During the week of 14 March 2022, a meeting was held with the [redacted] family (led by [redacted] ([redacted])) to provide project and activity updates relating to Scarborough and Pluto Train 2 at Karratha.
- On 23 March 2022, Woodside received an email from [redacted] on behalf of [redacted], [redacted] and [redacted] which contained an open letter signed by several Traditional Custodians requesting a halt to progress on the Scarborough Project.
- An online meeting with [redacted], [redacted] and [redacted] was arranged for 24 March 2022 but did not proceed due to technical issues.
- On 24 March 2022, Woodside emailed [redacted], [redacted] and Save Our Songlines relating to an attempted virtual meeting on 24 March 2022.
  - Woodside noted that despite its representatives being online and waiting for 35 minutes, the meeting did not proceed due to technical issues.
  - Woodside advised that it remained keen to understand Traditional Custodian concerns, including those matters that [redacted], [redacted] and Save Our Songlines have set out in, and that Woodside remained available to meet.
- On 24 March 2022, [redacted], [redacted] and Save Our Songlines emailed Woodside to advise that:

- They were waiting to join the virtual meeting but there was no response.
- They were disappointed at this outcome and hoped to have a more formal meeting in times to come.
- Emails exchanged later that day extended the offer to hold further meetings. By this stage, there had been four attempts by Woodside to meet and discuss these issues with [redacted] and [redacted]. This is in addition to the previous three years of consultation with Traditional Owner representative groups of which [redacted] and [redacted] were members.

- On 6 June 2022, some seven months after Save Our Songlines had launched its public campaign on social media, [redacted], [redacted] and Save Our Songlines emailed Woodside and attached a letter regarding consultation regarding NOPSEMA assessment of Scarborough offshore gas field development. The letter summarised the following claims and objections relating to the broader Scarborough activities as follows:

  We assert our rights to be consulted as 'relevant persons' in relation to cultural heritage impacts of the Scarborough gas development according to the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009

  1. Given the lack of previous assessment of cultural heritage impacts and the significant uncertainties regarding these impacts a precautionary approach must be taken according to the ESD Principles in Section 3A of the EPBC Act.
  2. Direct and indirect impacts on cultural heritage must be assessed now, and for all stages of the Scarborough development according to Section 527E of the Environmental Protection and Biodiversity Conservation (EPBC) Act and the EPBC Act Indirect Consequences Policy.
  3. In order to comply with requirements to consult under the regulations, disclosure of certain information is required from Woodside.
  4. Woodside's own policy, the UNDRIP and other frameworks require that Traditional Owners are provided with the right of free, prior and informed consent regarding any cultural heritage impacts.
  5. The Murujuga Aboriginal Corporation does not represent the interests of Traditional Owners seeking to protect cultural heritage and Woodside's limited consultation with MAC does not satisfy the requirement for free, prior and informed consent for cultural heritage impacts, or the requirements of 'relevant person' consultation according to the above regulations.

  Included with the correspondence was an open letter signed by several Traditional Custodians requesting (among other things) that further investment on project on Murujuga be withheld and that any further investments decisions on the Scarborough Project be paused. The letter was titled 'Open letter from Traditional Owners and Custodians of Murujuga concerning the proposed Woodside Scarborough gas development'

Throughout July and August 2022, Ngarluma and Yindjibarndi Foundation Ltd (NYFL) offered to engage [redacted] and [redacted] and to facilitate a series of up to three meetings between Woodside and [redacted] and [redacted] to discuss Scarborough and Pluto Train 2 project and activities. Woodside pursued this opportunity, including outlining payment for [redacted] and [redacted]'s time, but it did not progress, due to lack of responses from [redacted] and [redacted].

Ensuring Sufficient Information and Sufficient Time

- On 23 September 2022 Woodside emailed [redacted], [redacted] and Save Our Songlines advising of the proposed activity (Appendix F, reference 1.54) and provided a Consultation Information Sheet and Consultation FAQ.
- On 26 September 2022, [redacted], [redacted] and Save Our Songlines emailed a letter to NOPSEMA regarding other related Scarborough EPs:
  - [redacted], [redacted] and Save Our Songlines raised several claims relating to Woodside's consultation requirements under the Regulations.
  - [redacted], [redacted] and Save Our Songlines raised that they have functions interests and activities within the EMBAs of the Scarborough EPs (including this EP) which might be directly affected by the proposed activity.

  - [redacted], [redacted] and Save Our Songlines requested NOPSEMA to refrain from accepting the Scarborough EPs (not this EP) until Woodside had properly complied with Reg 11A in relation to its functions, interests and activities.
- On 29 September 2022, Woodside emailed [redacted], [redacted] and Save Our Songlines:
  - Woodside requested a meeting to share information in relation to the Scarborough Gas Project. Woodside requested to hold this meeting prior to 10 October 2022.
  - Woodside advised it welcomed the opportunity to meet to discuss the matters raised in the letters of 6 June 2022 and 29 September 2022, to share information in relation to the Scarborough Gas Project and demonstrate how items raised in the correspondence have been addressed in the relevant environment plans.
  - Woodside proposed that the meeting would be attended by subject matter experts and project personnel as required to answer any questions.
- On 6 October 2022, Woodside followed up with [redacted], [redacted] and Save Our Songlines via email and phone / voicemail.
- On 7 October 2022, [redacted], [redacted] and Save Our Songlines responded to Woodside via phone to arrange a suitable date and time.
- On 7 October 2022, Woodside and [redacted], [redacted] and Save Our Songlines discussed arrangements via phone to meet on 11 October 2022.
- On 7 October 2022, [redacted], [redacted] and Save Our Songlines contacted Woodside via phone to advise that a colleague would be in touch to set up the meeting. [redacted] and Save Our Songlines could not confirm if the 11 October 2022 meeting was proceeding as planned.
- On 10 October 2022, Woodside emailed [redacted], [redacted] and Save Our Songlines noting it had not received any further contact confirmation of the 11 October 2022 consultation meeting. Woodside advised it was still ready and available to proceed with a meeting.
- On 11 October 2022, Woodside sent personnel to Karratha in preparation for the meeting and followed up with [redacted], [redacted] and Save Our Songlines via phone and SMS.
- On 11 October, [redacted], [redacted] and Save Our Songlines advised Woodside via SMS that it was awaiting confirmation from its lawyers regarding the proposed meeting.
  - Woodside did not receive further contact and this meeting did not proceed.
- On 13 October 2022, Woodside followed up via email with [redacted], [redacted] and Save Our Songlines regarding any feedback on the information provided on 23 September 2022 relating specifically to the proposed activity (Appendix F, reference 1.100).
- Woodside received correspondence from [redacted], [redacted] and Save Our Songlines via NOPSEMA which was directed to Woodside and dated 8 November 2022:
  - The correspondence acknowledged Woodside's invitation to meet to discuss the Scarborough Environment Plans and proposed some alternative meeting dates.
  - The correspondence referenced prior correspondence between Woodside and [redacted], [redacted] and Save Our Songlines
  - The correspondence referenced a number of other related Scarborough Gas Project Environment Plans
- On 22 November 2022, Woodside emailed [redacted], [redacted] and Save Our Songlines:
  - Woodside acknowledged the letter addressed to Woodside on 8 November 2022 that was passed on via NOPSEMA.
  - Woodside confirmed its availability to meet on Tuesday 29 November 2022.
- On 24 November 2022, [redacted], [redacted] and Save Our Songlines provided correspondence to Woodside regarding the proposed meeting date. The The correspondence sought to clarify the intended scope and purpose of the meeting before setting a date. In particular [redacted], [redacted] and Save Our Songlines sought confirmation on the following items:
  - Acknowledgement of relevant person status
  - Provision of necessary information

- Purpose of meeting

- On 2 December 2022, Woodside emailed [redacted], [redacted] and Save Our Songlines and included responses to address the items raised on 24 November 2022, where appropriate (Appendix F, reference 1.104). Woodside reiterated its availability to meet and provided an option for any date in December 2022.
  - Woodside reiterated that it is open to continue consulting, receiving feedback and discussing concerns in relation to Woodside's Scarborough Environment Plans (EPs). Consultation is ongoing and feedback will continue to be accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.
  - Woodside confirmed its arrangements to meet and consult that have been ongoing since November 2021, and it remains open to continue consulting in relation to the Scarborough EPs.
  - Woodside advised it is available to meet with [redacted], [redacted] and Save Our Songlines on any date in December 2022 in Karratha. Woodside requested confirmation of availability to meet by 9 December 2022.
  - Woodside provided a link to the Consultation Information Sheet, which has been available on Woodside's website since September 2022, invited comments on the proposed activities to be provided before 21 October 2022. This EP is in development, and we are seeking your feedback to assist in its preparation.
  - Woodside noted there has been ample time and information available to inform feedback on our proposed Scarborough EPs. Woodside requested [redacted], [redacted] and Save Our Songlines provide feedback no later than at the proposed meeting in December 2022.
  - Woodsides noted the letter dated 24 November 2022 makes reference to arrangements which would enable [redacted], [redacted] and Save Our Songlines to share relevant information such as matters that are restricted to women or men only. Woodside requested for [redacted], [redacted] and Save Our Songlines to confirm what arrangements are required to enable you to share this information by 9 December 2022.
- Despite Woodside being available to meet any time in December and the date of December 9 being suggested, there was no response from [redacted], [redacted] and Save Our Songlines so a meeting could not proceed.
- On 4 January 2023, Woodside emailed [redacted], [redacted] and Save Our Songlines to follow-up on its meeting, request (Appendix F, reference 1.105). Woodside reiterated its availability to meet and provided an option for any date in January 2023.
- On 13 January 2023, [redacted], [redacted] and Save Our Songlines emailed Woodside:
  - [redacted], [redacted] and Save Our Songlines confirmed it would like to meet with Woodside, but reiterated its requests contained within its 24 November 2022 correspondence.
  - [redacted], [redacted] and Save Our Songlines stated it can advise of its availability for a meeting once the information requested above is provided.
- On 19 January 2023, Woodside emailed [redacted], [redacted] and Save Our SonglinesWoodside included the following responses to address the items raised, where appropriate:
  - Woodside reiterated it is open to continue consulting with [redacted], [redacted] and Save Our Songlines, receiving feedback and discussing their concerns in relation to Woodside's Scarborough Environment Plans (EPs) in Commonwealth and State waters (collectively referred to as the Scarborough EPs).
  - That consultation on the Scarborough EPs began when Woodside provided [redacted], [redacted] and Save Our Songlines with consultation information on the Scarborough EPs.
  - That Woodside has made every effort to meet with [redacted], [redacted] and Save Our Songlines to understand their claim of relevance and to develop a comprehensive understanding of potential impacts to their functions, interests or activities.
  - That it has been trying to arrange a meeting with [redacted], [redacted] and Save Our Songlines since November 2021 to discuss the Scarborough EPs, including a representative travelling to Karratha for a planned meeting on 11 October 2022 and making representatives available for a meeting on 29 November 2022.

- Woodside reiterated its availability to meet and provided an option for any date in January or early February 2023.

- On 8 February 2023, Woodside was copied into correspondence sent from the Environmental Defender's Office (EDO) to the WA State Minister for Mines and Petroleum regarding a separate Environment Plan under State Regulations. Copies of previous correspondence between Woodside and [redacted], [redacted] and Save Our Songlines were attached to the email.
- On 8 February 2023, the EDO (acting on behalf of SOS) emailed Woodside and provided a proposed date of the w/c 13 and 20 March 2023 for the meeting with its client.
- On 15 February 2023, Woodside emailed [redacted], [redacted] and Save Our Songlines. Woodside reiterated its availability to meet and, based on dates suggested within the 8 February correspondence, provided [redacted], [redacted] and Save Our Songlines with confirmation it was available to meet on the suggested dates in March 2023.
- On 24 February 2023 Woodside sent [redacted], [redacted] and Save Our Songlines a follow up email. Woodside reiterated its availability to meet.
- On 24 February 2023 the EDO (acting on behalf of [redacted], [redacted] and Save Our Songlines) emailed Woodside and advised its client was available to meet on 13 and 14 March 2023.
- On 28 February 2023 the EDO (acting on behalf of [redacted] [redacted] and Save Our Songlines) emailed Woodside to follow up on the request to secure a meeting.
- On 1 March 2023 Woodside emailed [redacted], [redacted] and Save Our Songlines (and CC to EDO) to propose the meeting time and location for 14 March 2023.
- On 7 March 2023 the EDO (acting on behalf of [redacted], [redacted] and Save Our Songlines) emailed Woodside to confirm the meeting time and location for 14 March 2023.
- On 8 March 2023 Woodside emailed the EDO, [redacted] [redacted] and Save Our Songlines with a proposed agenda for the 14 March 2023 meeting and requested the stakeholder advise if there are any particular issues they wish to discuss during the meeting.
- On 10 March 2023, Woodside emailed EDO, [redacted], [redacted] and Save Our Songlines with further logistic and meeting protocol details for the proposed meeting on 14 March 2023.
- On 14 March 2023, Woodside met with EDO, [redacted], [redacted] and Save Our Songlines on-country and discussed the proposed activity. This meeting represented the first time Woodside and [redacted], [redacted] and Save Our Songlines had met in person since the initial identification of Save Our Songlines in November 2021.
  - Woodside provided an overview of the Scarborough activities (Seismic EP, Subsea EP, D&C EP, SITI EP (Cth and State)).
  - Feedback from [redacted], [redacted] and Save Our Songlines (at the on-Country meeting):
    - [redacted], [redacted] and Save Our Songlines told Woodside that the proposed activities gave them a sick feeling and the activities should be stopped. [redacted], [redacted] and Save Our Songlines also informed Woodside that, in their view, there is nothing that can be done by Woodside to progress with the proposed Scarborough activities in a way that could minimise impact to [redacted], [redacted] and Save Our Songlines' functions, activities and interests or is respectful to its culture and country.
  - Woodside Response (at the on-Country meeting):

- Woodside agreed not to share cultural details which were shared with at the 14 March 2023 meeting.
- Woodside provided responses to specific actions taken during the meeting.
- Woodside provided background information on the "why" behind the Scarborough activities.
- Woodside's Scarborough Gas Project helps play a role in the global energy transition, helping neighbouring Asian countries take action on emissions reduction and advised there is further information on Woodside's website..
- Woodside to check with MAC whether MAC's ethnographic survey can be shared with [redacted], [redacted] and Save Our Songlines –
- The ethnographic survey is held by MAC and Woodside does not have permission to share it.
- Confirm fracking in relation to the Scarborough activites – there is no fracking to be undertaken as part of the proposed Scarborogh activities.

- On 16 March 2023, Woodside emailed EDO, [redacted] [redacted] and Save Our Songlines to advise that:
  - It appreciated the request for Woodside to attend the meeting with open hearts, deep listening and respectful conversation and that it would intend to continue this approach to engagement.
  - Woodside's consultation process is ongoing through the environmental approval process and when an activity is being performed and that Woodside looks forward to continuing its discussions with [redacted], [redacted] and Save Our Songlines in the future.
  - Woodside is open to consulting further with [redacted], [redacted] and Save Our Songlines on the proposed Scarborough activities and are open to the continuing engagements regarding the Scarborough activities.
- On 20 March 2023, Woodside emailed [redacted], [redacted] and Save Our Songlines and included responses to relevant objections, claims and additional information raised on 6 June 2022, 26 September 2022 and 24 November 2022:
  - Woodside confirmed it has conducted an ethnographic survey to support the development of EPs for the Scarborough Project (McDonald and Phillips 2021). These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the Subsea EP. An ethnographic survey determines the cultural values which are associated with a particular area, feature or object. Representatives from the Mardudhunera, Ngarluma, Yaburara, Yindjibarndi and Wong-Goo-Tt-Oo Peoples—all five Indigenous groups represented by MAC—participated in this survey (McDonald and Phillips 2021). Participants were not restricted in the types of heritage or other values they were encouraged to identify, but typical results from surveys of this nature might include songlines, ceremonial places such as 'thalu' sites for managing environmental resources, or places where activities such as birthing, initiation or other significant activities are performed.
  - Woodside confirmed none of Woodside's agreements with Traditional Custodians include "gag clauses" or restrictions on voicing opinions on its projects. Woodside has supported Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the Scarborough project.
  - Woodside advised that the principles of Free, Prior and Informed Consent (FPIC) are based in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) where it is envisaged as a communal right of Indigenous communities and secured through consultation with representative institutions utilising traditional decision-making mechanisms such as deferring to MAC's Circle of Elders. Woodside is guided by UNDRIP under its Indigenous Communities Policy and has consulted representative institutions including MAC for a number of years.
  - Woodside confirmed it has made several attempts since November 2021 to engage with Save Our Songlines, [redacted] and [redacted], with a meeting held on Tuesday 14 March 2023. Woodside confirmed that Woodside is open to receiving feedback on the Subsea EP.
  - Woodside advised that as per Woodside's ongoing consultation approach, feedback and comments received continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation.

- Woodside confirmed that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Subsea EP. The Subsea EP assess both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program (PAP), having regard to the nature and scale of the proposed PAP.
- Woodside advised the proposed PAP is outside of the National Heritage Place and the anticipated boundary of the Murujuga Cultural Landscape World Heritage Property.
- Woodside confirmed the extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the Subsea EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for the Subsea EP but may be evaluated in other Scarborough EPs as appropriate.
- Woodside confirmed emissions from the activities covered by the Subsea EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. The activities covered by the Subsea EP are located ~374 km away from Murujuga. Woodside advised that no rock art will be displaced as a result of the Scarborough Project.
- Woodside advised it has resourced Traditional Custodian representative institutions to access relevant information and independent expert advice so that they are enabled to provide informed and considered feedback on the broader Scarborough activities. A number of documents containing cultural heritage information, including heritage assessments, contain the intellectual property of Traditional Custodians or sensitive information that may be culturally restricted. For these reasons, Woodside does not disclose this information. This information is held by representative institutions and may be disclosed by them where they consider in appropriate to do so.
- Woodside provided a link to the Scarborough Project Cultural Heritage Management Plan which is a publicly available document and can be found at: https://www.woodside.com/docs/default-source/our-business---documents-and-files/burrup-hub---documents-and-files/scarborough---documents-and-files/scarborough-cultural-heritage-management-plan.pdf?sfvrsn=162e353a_3
- Woodside advised it continues to consult with MAC on all relevant aspects of this EP prior to and during the execution of activities.
- Woodside advised it considers the adequate time and information it has provided, including the meeting on Tuesday 14 March 2023, to be more than suitable to inform feedback on Woodside's proposed Scarborough EPs.
- Woodside confirmed that as per Woodside's ongoing consultation approach, feedback and comments received continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation. The first revision of the full EP will be made publicly available once accepted by the regulator.
- Woodside included an updated Consultation Information Sheet and confirmed that Woodside is open to continuing engagements regarding the Scarborough activities.

- On 24 March 2023, the EDO (acting on behalf of [redacted], [redacted] and Save Our Songlines) provided a letter to Woodside which copied NOPSEMA, DMIRS and the WA Minister for Mines and Petroleum:
  - The letter detailed a response to the 14 March 2023 meeting and Woodside's 16 March 2023 email, and covered a range of Scarborough EPs, including this proposed activity.
  - The EDO noted its client's concerns relating to:

        - The summary of the meeting provided by Woodside
        - clarification of its client's position
        - communication of relevant person status
        - Acknowledgement of response to questions arising at the meeting of 14 March 2023.
    - The letter noted that the EDO's clients would review the consultation information provided, and that it anticipates its clients would require approximately six weeks to do this.
    - The letter requested Woodside not submit the draft environment plan until consultation was complete.
- On 29 March 2023 Woodside emailed the EDO, [redacted], [redacted] and Save Our Songlines (CC to NOPSEMA) in response to the 24 March 2023 letter. Woodside reiterated its responses to topics raised during the meeting and in previous correspondence, relevant to the proposed activity. The response included the following responses which are summarised as follows:
    - Additional or new information
        - Woodside advised it has a process in place for the life of an EP that allows the EP to be updated to include additional or new information or feedback that is received after an EP is submitted. This is done through a "Management of Knowledge" process. This means that feedback or information provide in future meetings can still be taken into account and, where appropriate, can be incorporated in the EP during the life of the activity.
    - Woodside advised that following the meeting, based on the information provided, no updates were required to the EP via the Management of Knowledge process.

Functions, interests and activities

- Woodside acknowledged that it had been advised that [redacted], [redacted] and Save our Songlines' functions interests and activities are distinct from those of MAC and that it was interested to learn about this further.
- In response to a request for the ethnographic survey undertaken by MAC, Woodside reiterated that it has no authority to provide this information. Woodside suggested that [redacted] may have contacts at MAC to request a copy of that survey.
- Woodside advised that as to [redacted], [redacted] and Save Our Songlines' functions, interests and activities (and those of Save Our Songlines), it continues to invite these to be shared with Woodside so it can consider the likely impacts and risks of the EP activities on these functions, interests and activities and what Woodside can do to lessen or avoid those impacts.
- Woodside confirmed that as [redacted], [redacted] and Save Our Songlines' were not prepared to share some information with Woodside, it remains open to hearing from them when this is known, and it is ready to be shared.

Minimising impacts to functions, interests and activities

- Woodside reshared its interpretation of the take-aways from the meeting in relation to:
    - Underwater activities
    - Greenhouse gas emissions
- In the meeting, Woodside provided an overview of the Scarborough Project and potential impacts of activities on whales.
- Emissions from the activities covered by the Commonwealth EPs are of a scale that no credible impact pathway is foreseen. This has been the subject of separate correspondence.
- Industrialisation of Murujuga

- This subject has been addressed in separate correspondence in which Woodside has set out its understanding of the history of the Burrup and the industrial agreements involved. Woodside has also provided responses which are along the lines that no credible impact pathway is foreseen from the activities covered by the Commonwealth EPs which could damage rock art and heritage sites and that no cultural impact to future access to sites of cultural and spiritual significance is foreseen.
- Detail of EPs and information accessed and provided.
- The meeting provided an overview of the Scarborough Project and followed volumes of previous correspondence on the Scarborough Project. Previous correspondence indicates that a large volume of information on the Scarborough Project has been accessed, read and thought through. The correspondence shows an informed and thorough understanding of the various Scarborough activities and the Scarborough Project.

Consultation in general

- Woodside advised it has continued to consult with [redacted], [redacted] and Save Our Songlines' and continues to invite further consultation.

Relevant persons

- Woodside advised that the Commonwealth approval process requires Woodside to consult with "relevant persons".
- Woodside has previously explained the approval process relating to the concept of "relevant persons" and noted that, at the relevant time consultations are included under a category of "relevant persons" in EPs. Woodside generally applies this category at a stage when they are trying to understand more about a person's functions, interests and activities and also the impacts of Woodside's activities on them.
- Woodside reiterated that there is no need for it to categorise persons as relevant in order to consult with them.

Ongoing consultation

- Woodside advised that once an EP is accepted, Woodside continues ongoing consultations with relevant persons. is open to continuing consultation to understand how the proposed Commonwealth EP activities relevantly affect [redacted], [redacted] and Save Our Songlines.

Further consultation

- Woodside noted that in [redacted], [redacted] and Save Our Songlines' correspondence, it would like to organise another meeting and will require approximately six weeks to read into materials and prepare for a meeting.
- Woodside requested for [redacted], [redacted] and Save Our Songlines' to advise its preferred times for the next meeting, noting the time taken to arrange the previous meeting.
- Woodside advised it is available to meet in the week commencing 8 May 2023 or earlier.

- On 8 May 2023, the Environment Defenders Office emailed Woodside to say they have not had any response to date, and were writing again to enquire whether Woodside wishes to propose dates that they can put to their clients for consultation regarding the seismic survey EP.
- On 9 May 2023, Woodside emailed [redacted], [redacted] and Save Our Songlines via the Environment Defenders Office:
  - Woodside reiterated its willingness to consult on all Scarborough Commonwealth EPs including the Subsea EP referenced during consultation in March.
  - Woodside confirmed availability to meet in May and suggested 3 possible meeting dates that could be either on country, virtually or by phone.
  - Woodside outlined a draft agenda.
- On 15 May 2023, the Environment Defenders Office emailed Woodside to say they were confirming instructions with our clients and will revert as soon as we are able.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
[redacted], [redacted] and Save Our Songlines have provided requests for further information on the broader Scarborough activities (including the proposed activity) relating to: ● Background information on the Scarborough activities ● Whether MAC's ethnographic survey can be shared with [redacted], [redacted] and Save Our Songlines. ● Confirmation if fracking will be conducted in relation to the Scarborough activities [redacted], [redacted] and Save Our Songlines have provided feedback, claims and objections on the broader Scarborough activities (including the proposed activity) relating to: ● Consultation requirement in general, including the consultation information and additional information provided by Woodside, as well as responses to questions and topics raised. ● [redacted], [redacted] and Save Our Songlines sought to be recognised as relevant persons ● Impacts from the proposed activity on [redacted], [redacted] and Save Our	Woodside has now consulted with [redacted], [redacted] and Save Our Songlines on both the proposed activity and the broader Scarborough project. Following a meeting on Country with [redacted], [redacted] and Save Our Songlines on 14 March 2023 (and subsequent correspondence from the EDO on 24 March 2023), Woodside has assessed feedback and topics raised relevant to the proposed activity. Feedback has been assessed as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate. 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 7.6**).	Woodside has consulted [redacted], [redacted] and Save our Songlines in the course of preparing this EP. Woodside has assessed the claims or objections raised by [redacted] and Save our Songlines. No additional measures or controls have been put in place. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on [redacted], [redacted] and Save our Songlines' functions, interests or activities.

Songlines' functions, interests and activities: ● Underwater activities ● Greenhouse gas emissions ● Industrialisation of Murujuga ● Details of EPs and information accessed and provided ● Ongoing consultation.		

Table 5-5: Engagement Report with Persons or Organisations Assessed as Not Relevant

Commonwealth Commercial fisheries and representative bodies
Australian Southern Bluefin Tuna Industry Association (ASBTIA)
Summary of information provided and record of consultation: ● On 21 September 2022, Woodside emailed ASBTIA advising of the proposed activity (Appendix F, reference 1.23) and provided a Consultation Information Sheet, Consultation FAQ and fisheries map ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.78). ● On 3 February 2023, Woodside emailed ASBTIA on the proposed activity (Appendix F, reference 1.139) and provided a Consultation Information Sheet and fisheries map. ● On 22 February 2023 Woodside sent a follow up email (Appendix F, reference 1.171). ● On 17 May 2023, Tuna Australia sent an email to NOPSEMA, and copied in Woodside, regarding Woodside's position on engagement with Tuna Australia. The email stated: - When energy companies execute a service agreement with Tuna Australia, this ensures that all Western Tuna and Billfish Fishery (WTBF) and Eastern Tuna and Billfish Fishery concession holders are consulted on environmental plans and responses are provided in a report. - Woodside do not have an appreciation of the nature fishing and are more content to receive information to support their environmental plans and proposals free of charge. This is not consistent with their company values. - Woodside has failed to recognise the WTBF is a relevant person. - WTBF concession holders are very concerned with developments in their fishing zone and have many comments and questions on environmental plans and proposals. - Tuna Australia requested that to meet sound consultation principles NOPSEMA stipulate that all environmental plan submissions receive formal advice from Tuna Australia.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as PS 2.4.1 in this EP. No additional measures or controls are required.
Pearl Producers Australia		
Summary of information provided and record of consultation: ● On 21 September 2022, Woodside emailed Pearl Producers Australia advising of the proposed activity (Appendix F, reference 1.21) and provided a Consultation Information Sheet, Consultation FAQ and fisheries map. ● On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.80).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area prior to the commencement and at the end of the activity, as referenced as **PS 2.4.1** in this EP. No additional measures or controls are required.

Other non-government groups or organisations		
Australasian Centre for Corporate Responsibility (ACCR)		
Summary of information provided and record of consultation: ● On 21 September 2022, Woodside emailed ACCR advising of the proposed activity (Appendix F, reference 1.34) and provided a Consultation Information Sheet and Consultation FAQ. ● On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.96).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
The Climate Council (TCC)		
Summary of information provided and record of consultation: ● On 21 September 2022, Woodside emailed TCC advising of the proposed activity (Appendix F, reference 1.40) and provided a Consultation Information Sheet and Consultation FAQ. ● On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.95).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
Doctors for the Environment Australia (DEA)		
Summary of information provided and record of consultation:		

- On 21 September 2022 Woodside emailed DEA advising of the proposed activity (Appendix F, reference 1.44) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022 Woodside followed-up via email (Appendix F, reference 1.84).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

Extinction Rebellion WA (XRWA)

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed XRWA advising of the proposed activity (Appendix F, reference 1.37) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.93).
- On 14 October 2022 XRWA emailed Woodside:
  - XRWA advised it is 'entirely opposed to all of Woodside's new offshore gas extraction projects'.
  - XRWA stated: 'Attempting to distract from the disastrous damage to the global environment that will ensue from Woodside's new projects by seeking responses to their small component parts can only be viewed as cynical and desperate'.
  - XRWA advised that when Woodside is ready to respond in a considered and responsible manner to the overwhelming weight of scientific opinion that demands that there must be no new gas projects Extinction Rebellion WA will be only too happy to meet with Woodside.
- On 1 November 2022, Woodside responded to XRWA's previous email reiterating the purpose of the previous email was to seek to consult on the proposed activities in relation to the specific issue of carbon emissions raised in XRWA's email. Woodside confirmed that extraction of gas is not within the scope of the activity in the Subsea EP. Woodside also acknowledged that XRWA does not wish to engage further on the Subsea EP which Woodside respectfully acknowledged.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
XRWA has provided feedback that it is opposed to all of Woodside's new offshore gas extraction projects, and it does not wish to be consulted by Woodside on the proposed activity.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.

Whilst feedback has been received, there were no objections or claims.		
Friends of Australian Rock Art. Inc (FARA)		
Summary of information provided and record of consultation: ● On 21 September 2022, Woodside emailed FARA advising of the proposed activity (Appendix F, reference 1.45) and provided a Consultation Information Sheet and Consultation FAQ. ● On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.85).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
International Fund for Animal Welfare (IFAW)		
Summary of information provided and record of consultation: ● On 21 September 2022, Woodside emailed IFAW advising of the proposed activity (Appendix F, reference 1.28) and provided a Consultation Information Sheet and Consultation FAQ. ● On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.87).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measures or controls are required.
Lock The Gate Alliance (LTGA)		
Summary of information provided and record of consultation:		

- On 21 September 2022 Woodside emailed LTGA advising of the proposed activity (Appendix F, reference 1.42) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022 Woodside followed-up via email (Appendix F, reference 1.86).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

Market Forces

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed Market Forces advising of the proposed activity (Appendix F, reference 1.39) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.97).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

World Wildlife Fund (WWF) Australia

Summary of information provided and record of consultation:

- On 21 September 2022, Woodside emailed WWF advising of the proposed activity (Appendix F, reference 1.49) and provided a Consultation Information Sheet and Consultation FAQ.
- On 13 October 2022, Woodside followed-up via email (Appendix F, reference 1.89).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.
Research institutes and local conservation groups or organisations		
University of Western Australia (UWA)		

Summary of information provided and record of consultation:

- On 11 November 2022, Woodside emailed UWA advising of the other proposed Scarborough activities Woodside asked for details of any research activities UWA is undertaking that may overlap with the proposed activities (Appendix F, reference 1.101)
- On 17 November 2022, UWA emailed Woodside:
  - UWA undertook a Multibeam Survey of the Madeline Shoals and although it captured most of the area, the geology appears to continue north into the Dampier Marine Park.
  - The northern tip of UWA's MBES survey mapped outcropping igneous rock on the seabed is 1.3 km south of the Borrow Grounds SW boundary.
  - UWA has heard from Oceanic Offshore that they know of other hardgrounds north of the Madeline Shoals, but they did not have the time to follow up on their lead.
  - UWA also noted it has a Parks Australia Grant to undertake habitat mapping of the Dampier Marine Park (early 2023) and it is to investigate the extent of the hard rocky terrains within this zone.
- On 18 November 2022, UWA emailed Woodside:
  - UWA also shared that the Madeleine Shoals have been added to the cultural landscape boundaries of the World heritage nomination dossier.
- On 14 December 2022, Woodside emailed UWA and arranged a time to meet.
- On 15 December 2022, Woodside met with representatives from UWA via video conference to provide a briefing on the broader Scarborough Project activities and related EPs. During its meeting UWA confirmed:
  - In general, Woodside's offshore activities are out of the scope of interest for UWA; however, it has a particular interest in the Madeleine Shoals and the adjacent borrow ground in Commonwealth waters.
  - There is a lack of data on terrain outside of the current mapping on Madeleine Shoals that, while unlikely, may extend north (towards the borrow ground area).
  - The full extent of the terrain was not captured given time and cost constrains.
  - The current mapping has the Shoals mapped ~100 m from the marine park boundary and ~1.3 km from the borrow ground boundary.
  - UWA also acknowledged Woodside may already have mapping of the borrow ground that indicates no exposed rock or hard material.

- Woodside confirmed extensive studies of the borrow ground and adjacent marine park found no hard material and a substantial depth of sand.
- UWA concluded it has submitted for additional funding for further exploration of Madeleine Shoals.

- On 6 February 2023, Woodside emailed UWA (Appendix F, reference 1.152) and:
  - Noted Woodside appreciated the opportunity to meet with UWA in December to discuss the Scarborough development and related EPs, including the activities proposed under this EP.
  - Noted Woodside understood from the meeting that the proposed Scarborough activities are predominantly outside the scope of interest for UWA but wanted to bring to the UWA's attention that it had updated its Consultation Information Sheets for the Scarborough EPs.
  - Noted Woodside would soon be submitting the proposed EPs and requested any additional feedback from UWA.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
UWA and Woodside have met to discuss the broader Scarborough activities and UWA has advised that the proposed activities are predominantly outside the scope of interest for UWA. Whilst feedback has been received, there were no objections or claims.	Woodside has provided additional information to UWA during the meeting on 15 December 2022 relating to UWA's areas of interest. UWA has advised that the proposed activities are predominantly outside the scope of their interest. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.

Western Australian Marine Science Institution (WAMSI)

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside emailed WAMSI advising of the proposed activity (Appendix F, reference 1.147) and provided an updated Consultation Information Sheet. Woodside also asked for details of any research activities WAMSI is undertaking that may overlap with the proposed activity.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.169).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
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 7.6**).	No additional measures or controls are required.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)		
Summary of information provided and record of engagement: • On 6 February 2023, Woodside emailed CSIRO advising of the proposed activity (Appendix F, reference 1.163) and provided an updated Consultation Information Sheet. Woodside also asked for details of any research activities CSIRO is undertaking that may overlap with the proposed activity. • On 22 February 2023, Woodside sent a follow up email (reference 1.173).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
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 7.6**).	No additional measure or controls are required.
Australian Institute of Marine Science (AIMS)		
Summary of information provided and record of engagement: • On 21 September 2022, Woodside emailed AIMS (Appendix F, reference 1.8) advising of the proposed activity and provided a Consultation Information Sheet and Consultation FAQ. • On 13 October 2022, Woodside sent a follow up email (Appendix F, reference 1.78). • On 6 February 2023, Woodside emailed AIMS advising of the proposed activity (Appendix F, reference 1.156) and provided an updated Consultation Information Sheet. Woodside also asked for details of any research activities AIMS is undertaking that may overlap with the proposed activity. • On 9 February 2023, AIMS emailed Woodside thanking it for the opportunity to consider the proposed activity. • AIMS confirmed there are no overlaps with planned AIMS science activities in the area.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
AIMS has responded and confirmed there are no overlaps with planned AIMS science activities in the area. Whilst feedback has been received, there were no objections or claims.	AIMS confirmed there are no overlaps with planned AIMS science activities in the area. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	No additional measures or controls are required.

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

6.1 Overview

This section presents the impact and risk analysis, evaluation and Environment Performance Outcomes (EPOs), Environmental Performance Standards (EPS) and Measurement Criteria (MC) for the Petroleum Activities Program, using the methodology described in **Section 2** of this EP.

6.2 Impact and Risk Analysis and Evaluation

As required by Regulations 13(5) and 13(6) of the Environment Regulations, the following analysis and evaluation demonstrates that the identified impacts and risks associated with the Petroleum Activities Program are reduced to ALARP, are of an acceptable level and consider all operations of the activity, including potential emergency conditions. The impact assessment for planned activities has been based on the size of the PAA.

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

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

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

The ENVID (performed in accordance with the methodology described in **Section 2**) identified 14 sources of environmental impacts and risks. A summary of the ENVID is provided in **Table 6-3**.

The WA-61-L and WA-62-L Subsea Infrastructure Installation specific ENVID workshop was conducted on 28 April 2022. Attendees included: Environmental Advisers, Environmental Scientists, Environmental Engineers, Hydrocarbon Spill Adviser, Environmental Consultants, Installation Engineers and Managers, and Survey Operations Managers. The participants' breadth of knowledge, training and experience was sufficient to reasonably assure that the hazards that may arise in connection with the petroleum activity in this EP were identified.

The impact and risk analysis and evaluation for the Petroleum Activities Program indicates that all current environmental risks and impacts associated with the individual activities are reduced to ALARP and are of an acceptable level, as discussed further in **Sections 6.7** and **6.8**. As described in **Section 4.9.1** the marine ecosystems hold both cultural and environmental value to traditional custodians.

Woodside understands that marine ecosystems are considered connected and marine species in offshore waters may also hold both cultural and environmental value, with the Indigenous groups in nearshore areas. Activities that directly or indirectly impact marine species or disrupt or change their migration patterns may impact an Indigenous groups functions, interests or activities where this impacts coastal Indigenous connection with, or traditional uses of, those species or ecosystems in nearshore areas.

Examples of pathways by which offshore activities may impact coastal Aboriginal connections with, or traditional uses of, marine species include activities that result in a measurable decrease in species population or changes to migration routes. It follows inherently that any impacts to marine species offshore must be noticeable from the coastal waters in which Aboriginal groups hold rights

and interests in order to have an impact in these areas. As a result, potential impacts to environmental receptors must be managed in a manner that protects the ecological community as a population, and does not disrupt behaviour or ecosystem function in nearshore coastal areas.

Woodside considers that when the impacts and risks to marine species, including potential totemic species, have been reduced to ALARP and an acceptable level in offshore areas, the potential impacts and risks to cultural values associated with coastal Indigenous connection with, or traditional uses of marine species and associated ecosystems in nearshore coastal waters are also reduced to ALARP and an acceptable level.

6.2.1 Concurrent operations and cumulative impacts

The Scarborough OPP (SA0006AF0000002, Rev 5; Section 8) assesses the potential cumulative impact of the Scarborough Project and other activities / developments. In addition, Woodside has assessed the cumulative impacts of the Petroleum Activities Program in relation to other Scarborough activities that could realistically result in overlapping temporal and spatial extents.

Table 6-1 shows the proposed sequence of activities within this PAP and opportunities for concurrent activities in permit areas WA-61-L and WA-62-L. This illustrates that the highest density of vessel activity is expected to occur in about April 2024, with mooring pre-lay (HCV and support vessel), D&C (MODU and support vessel), and trunkline installation (PV, B-type and support vessel). Although unplanned and highly unlikely, subsea installation campaign 1 and/or IMMR may also occur across April 2024, adding a PV, LCV and support vessel and/or OCV to the field. This worst-case scenario has been assessed, at any time throughout the life of the EP, as acceptable and ALARP with the controls implemented.

In this EP, cumulative impact assessment has been carried out for routine acoustic emissions. It was determined that cumulative impact from activities within the Petroleum Activities Program, as well as between the Petroleum Activities Program, D&C and SI&TI activities, was not credible for light emissions and vessel discharges.

Other facilities located in proximity to the PAA were identified within **Section 4.9.6**. Given the distance between the location of the PAA and other nearby petroleum facilities and activities, no cumulative risks or impacts will credibly occur.

Table 6-1: Indicative concurrent Woodside operations in WA-61-L, including activities within this EP Petroleum Activities Program and the Scarborough D&C and SI&TI EPs

Activity	Vessel(s)	Approx. Duration	Sep - 23	Oct - 23	Nov - 23	Dec - 23	Jan - 24	Feb - 24	Mar - 24	Apr - 24	May - 24	Jun - 24	Jul - 24	Aug - 24	Sep - 24	Oct - 24	Nov - 24	Dec - 24	Jan - 25	Feb - 25	Mar - 25	Apr - 25	May - 25	Jun - 25
Activities covered by this EP																								
Concrete pad installation & mooring pre-lay survey *inc. WA-62-L	LCV	2 months			1	1																		
Gravimetry baseline survey *inc. WA-62-L	Survey vessel / LCV	2 months															1	1						
Subsea installation campaign 1	PV, LCV, intermittent support vessel (could include PSV)	3 months		3	3	3																		
Subsea installation campaign 2	LCV, HCV, intermittent support vessel (could include PSV)	3 months															3	3	3					
Mooring pre-lay	HCV, intermittent support vessel (could include HLV)	3 months						2	2	2														

Activity	Vessel(s)	Approx. Duration	Sep - 23	Oct - 23	Nov - 23	Dec - 23	Jan - 24	Feb - 24	Mar - 24	Apr - 24	May - 24	Jun - 24	Jul - 24	Aug - 24	Sep - 24	Oct - 24	Nov - 24	Dec - 24	Jan - 25	Feb - 25	Mar - 25	Apr - 25	May - 25	Jun - 25
IMMR	OCV (or similar)	TBC[7]																						
Activities covered by other approvals																								
D&C	MODU, support vessel	13 months			2	2	2	2	2	2	2	2	2	2	2	2	2	2						
Trunkline install[8]	PV, B-type, intermittent support vessel	6 months (~1 month in Permit Area)							3	3														
Trunkline pre-commissioning[9]	CV	1–3 months								1	1													
Trunkline surveys[3]	Survey vessel	2 months (~4 days in Permit Area) per survey	1									1												

Note: Planned execution windows and vessel numbers are shown in dark blue; potential execution windows are shown in light blue.

All schedules are indicative only and subject to change based on project schedule requirements, vessel availability, unforeseen circumstances, and weather.

[7] Potential for IMMR to occur throughout the life of the EP, post-installation of any infrastructure

[8] Within WA-61-L

[9] Trunkline pre-commissioning will not occur until trunkline installation is complete, so no overlap will occur

6.3 Environmental Performance Outcomes, Standards and Measurement Criteria

Regulation 13(7) of the Environment Regulations requires that an EP includes Environmental Performance Outcomes (EPOs), Environmental Performance Standards (EPSs) and Measurement Criteria (MC) that address legislative and other controls to manage the environmental risks of the activity to ALARP and acceptable levels.

The EPOs, EPSs and MC specified are consistent with legislative requirements and Woodside's standards and procedures. They have been developed based on the Codes and Standards, Good Industry Practices and Professional Judgement outlined in **Sections 2.3.2 and 2.3.3** as part of the acceptability and ALARP justification process.

The EPOs, EPSs and MC are presented throughout this section and in **Appendix D** (Oil Spill Preparedness and Response). A breach of these EPOs or standards constitutes a 'Recordable Incident' under the Environment Regulations (refer to **Section 7.8.4**).

The Scarborough OPP identified the impacts and risks associated with the proposed development and defined suitable high-level EPOs. The OPP EPOs have been cascaded to the relevant project activities under this EP and the relationship between OPP EPOs and those developed in this EP is summarised in **Table 6-2**.

For the physical and biological receptors within the EMBA, Woodside has set EPOs that are consistent with the *Matters of National Environmental Significance – Significant impact guidelines 1.1* (DoE, 2013). For social receptors, including fishing and other commercial activities, the EPOs that have been set reflect the requirements in the OPGGS Act Section 280(2), in that the activities undertaken as a part of the development of Scarborough should not interfere with other marine users, to a greater extent than is necessary for the exercise of right conferred by the titles granted.

The EPOs for all environmental impacts/risks are identified and summarised in **Table** 6-2.

Table 6-2: Comparison of EP EPOs to the relevant OPP EPOs

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Planned Activities			
Section 6.7.1 Physical Presence – Disturbance to Benthic Habitat from subsea infrastructure activities	**EPO 1** Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results.	**EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 12.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2:**	The EPOs adopted in the EP for the disturbance to benthic habitat are consistent with the EPOs in the OPP.
	EPO 2 Undertake the Petroleum Activities Program in a manner that prevents a substantial change to water quality that may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**EPO 6.1; EPO 7.1; EPO 8.1; EPO 9.1; EPO 10.1; EPO 12.1; EPO 15.2**	
Section 6.7.2 Physical Presence – Interaction with other marine users	**EPO 3** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on the sustainability of commercial fishing.	**EPO 5.1**	The EPOs adopted in the EP for interaction with other marine users are consistent with the EPOs in the OPP.
	EPO 4 Undertake the Petroleum Activities Program in a manner that does not interfere with other marine users to a greater extent than is necessary for the exercise of right conferred by the titles granted.	**EPO 5.2**	
Section 6.7.3 Routine Acoustic Emissions – Generation of Noise from Project Vessels	**EPO 5** Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	**EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5**	The EPOs adopted in the EP for routine noise emissions are consistent with the EPOs in the OPP.
	EPO 6 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population.	**EPO 4.2; EPO 15.7; EPO 18.4:**	

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	EPO 7 Undertake the Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species.	**EPO 1.3; EPO 10.5; EPO 15.8**	
Section 6.7.4 Routine Light Emissions: External Lighting on Project Vessels	**EPO 1** Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results.	**EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 12.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2:**	The EPOs adopted in the EP for routine light emissions are consistent with the EPOs in the OPP.
	EPO 8 Undertake the Petroleum Activities Program in a manner that will not have a substantial adverse effect on a population of seabirds or shorebirds, or the spatial distribution of the population.	**EPO 1.2; EPO 15.3**	
	EPO 5 Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	**EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5**	
	EPO 6 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population.	**EPO 4.2; EPO 15.7; EPO 18.4**	
	EPO 7 Undertake the Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species.	**EPO 1.3; EPO 10.5; EPO 15.8**	
Section 6.7.5	**EPO 9** Undertake the Petroleum Activities Program in a manner that will not result in a substantial change in air quality which may	**EPO 2.1**	**New EPO –** EPO 6 relating to Atmospheric and GHG emissions to be inclusive of all

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Routine Atmospheric and Greenhouse Gas Emissions	adversely impact on biodiversity, ecological integrity social amenity or human health.		emissions relevant to this Petroleum Activities Program.
	EPO 10 Assess opportunities to improve energy efficiency and reduce GHG emissions from the Petroleum Activities Program.	**New EPO**	
Section 6.7.6 Routine and Non-Routine Discharges: Subsea Infrastructure Installation	**EPO 11** Undertake the Petroleum Activities Program in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**EPO 6.1; EPO 7.1; EPO 8.1; EPO 9.1; EPO 10.1; EPO 12.1; EPO 14.1; EPO 15.2**	The EPOs adopted in the EP for project vessel discharges are consistent with the EPOs in the OPP.
	EPO 1 Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results.	**EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 12.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2:**	
	EPO 12 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution.	**EPO 10.2; EPO 12.3**	
	EPO 13 Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity an area defined as a KEF.	**EPO 10.8; EPO 12.5; EPO 16.3**	
	EPO 14 Undertake Petroleum Activities Program in a manner that prevents substantial change in sediment quality, which may adversely impact biodiversity, ecological integrity, social amenity or human health.	**EPO 12.2**	

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	EPO 15 Undertake Petroleum Activities Program in a manner that prevents significant impacts on the values of the Exmouth Plateau KEF.	**EPO 10.3**	
Section 6.7.7 Routine and Non-Routine Discharges: Project Vessels	**EPO 11** Undertake the Petroleum Activities Program activities in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health	**EPO 6.1; EPO 7.1; EPO 8.1; EPO 9.1; EPO 10.1; EPO 12.1; EPO 14.1; EPO 15.2**	
	EPO 12 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution.	**EPO 10.2; EPO 12.3**	
Unplanned Activities			
Section 6.8.2 Unplanned Hydrocarbon Release: Vessel Collision	**EPO 17** No release of hydrocarbons to the marine environment due to a vessel collision associated with the Petroleum Activities Program.	**EPO 19.1**	The EPOs adopted in the EP for an unplanned hydrocarbon release from a vessel collision are consistent with the EPOs in the OPP.
Section 6.8.2 Unplanned Hydrocarbon Release: Bunkering	**EPO 18** Undertake the Petroleum Activities Program in a manner that will prevent an unplanned release of non-process/reservoir hydrocarbons to the marine environment resulting in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**EPO 14.1**	This EPO has been adapted from EPO 14.1 in the Scarborough OPP which pertains to chemical releases; and made relevant to non-Process/reservoir hydrocarbons such as vessel marine fuel.
Section 6.8.4 Unplanned Discharge: Chemicals and Minor	**EPO 19** Undertake the Petroleum Activities Program in a manner that will prevent an unplanned release of chemicals or non-process hydrocarbons to the marine environment resulting in a substantial change in water quality which may adversely	**EPO 14.1**	The EPOs adopted in the EP for an unplanned hydrocarbon release from bunkering are consistent with the EPOs in the OPP.

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Hydrocarbon Spills (Deck and Subsea spills)	impact on biodiversity, ecological integrity, social amenity or human health.		
Section 6.8.5 Unplanned Discharge: Hazardous and Non – Hazardous Solid Waste	**EPO 20** Undertake Petroleum Activities Program in a manner that will prevent an unplanned release of solid waste to the marine environment resulting in a significant impact	**EPO 15.1**	The EPOs adopted in the EP for an unplanned discharge of hazardous and non-hazardous solid wastes are consistent with the EPOs in the OPP.
	EPO 8 Undertake Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of seabirds or shorebirds, or the spatial distribution of the population	**EPO 1.2; EPO 15.3**	
	EPO 5 Undertake Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	**EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5**	
	EPO 6 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population.	**EPO 4.2; EPO 15.7; EPO 18.4**	
	EPO 7 Undertake Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species.	**EPO 1.3; EPO 10.5; EPO 15.8**	
	EPO 2 Undertake Petroleum Activities Program in a manner that will prevent a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**EPO 6.1; EPO 7.1; EPO 8.1; EPO 9.1; EPO 10.1; EPO12.1; EPO 14.1; EPO 15.2**	
	EPO 6	**EPO 10.4; EPO 15.4**	

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	Undertake Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of fish, or the spatial distribution of the population.		
	EPO 21 Undertake Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of marine mammals or the spatial distribution of the population.	**EPO 10.7; EPO 15.5; EPO 18.3**	
Section 6.8.6 Physical Presence (Unplanned): Seabed Disturbance	**EPO 13** Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a KEF.	**EPO 10.8; EPO 12.5; EPO 16.3**	The EPOs adopted in the EP for unplanned seabed disturbance are consistent with the EPOs in the OPP.
	EPO 22 Undertake the Petroleum Activities Program in a manner which prevents unplanned seabed disturbance.	**EPO 16.1**	
Section 6.8.7 Physical Presence (Unplanned): Invasive Marine Species	**EPO 13** Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a KEF.	**EPO 10.8; EPO 12.5; EPO 16.3**	OPP EPO's 17.1, 17.3 and 17.4 have been combined to form one EPO which encompasses the intent and outcome of all three.
	EPO 23 Undertake the Petroleum Activities Program in a manner which prevents a known or potential pest species (IMS) becoming established.	**EPO 17.1, EPO 17.3, EPO 17.4**	
Section 6.8.8 Physical Presence (Unplanned): Collision with Marine Fauna	**EPO 24** Undertake the Petroleum Activities Program in a manner which prevents a vessel strike with protected marine fauna during project activities.	**EPO 18.1**	The EPOs adopted in the EP for the unplanned collision with marine fauna are consistent with the EPOs in the OPP.

6.4 Presentation

The environmental impact and risk analysis and evaluation (ALARP and acceptability), EPOs, standards and MC are presented in the following tabular form throughout this section. Italicised text in the following example denotes the purpose of each part of the table with reference to the relevant sections of the Environment Regulations and/or this EP.

<table>
<tr><th colspan="15">Scarborough OPP – Relevant Impact Assessment Section</th></tr>
<tr><td colspan="15"><Reference to section number in the Scarborough Project OPP></td></tr>
<tr><th colspan="15">Context <Description of the context for the impact/risk. Regulation 13(1, 13(2) and 13(3)></th></tr>
<tr><td colspan="5">Relevant Activities
Source of Aspect – Section reference
Description of the Activity – Regulation 13(1)</td><td colspan="5">Existing Environment
Relevant environment – Section reference
Description of the Environment – Regulations 13(2)(3)</td><td colspan="5">Stakeholder consultation
Consultation – Section reference
Consultation – Regulation 11A</td></tr>
<tr><th colspan="15">Impact/Risk Evaluation Summary</th></tr>
<tr><td rowspan="2">Source of Impact/Risk
Regulation 13(1)</td><td colspan="7">Environmental Value Potentially Impacted
Regulations 13(2)(3)</td><td colspan="7">Evaluation</td></tr>
<tr><td>Soil and Groundwater</td><td>Marine Sediment</td><td>Water Quality</td><td>Air Quality (inc. odour)</td><td>Ecosystems / Habitat</td><td>Species</td><td>Socio-economic</td><td>Decision Type</td><td>Impact/Consequence</td><td>Likelihood</td><td>Current Risk Rating</td><td>ALARP Tools</td><td>Acceptability</td><td>Outcome</td></tr>
<tr><td>Summary of source of risk/impact</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><th colspan="15">Description of Source of Impact/Risk</th></tr>
<tr><td colspan="15">Description of the identified impact/risk including sources or threats that may lead to the risk or identified event. Regulation 13(1).</td></tr>
<tr><th colspan="15">Detailed Impact Assessment</th></tr>
<tr><td colspan="15">Assessment of Potential Impacts</td></tr>
<tr><td colspan="15">Receptor
<u>Impact / risk</u>
Assessment of potential impact
Discussion and assessment of the potential impacts to the identified environment value(s). Regulations 13(5)(6).
Potential impacts to environmental values have been assigned and discussed based on Woodside's Environmental Consequence Definitions for Use in Environmental Risk Assessments (Figure 2-1).</td></tr>
<tr><td colspan="15">Cumulative Impacts</td></tr>
<tr><td colspan="15">Description of any cumulative impacts specific to the PAP (cumulative impact assessment of Scarborough project as a whole is covered in the OPP)</td></tr>
</table>

Summary of Assessment Outcomes				
Receptor	**Impact**	**Receptor Sensitivity Level**	**Magnitude**	**Impact Significance Level / Risk Consequence**

Overall Impact Significance Level/ Risk consequence: *Roll up to Impact/consequence rating (in impact/risk evaluation summary at top of this table) but need to look at individual receptors as being equal to or less than level of acceptability in the OPP.*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
ALARP Tool Used – Section 2.3.4				
Summary of control considered to ensure the impacts and risks are continuously reduced to ALARP. *Regulation 13(5)(c).*	*Technical/logistical feasibility of the control.* *Cost/sacrifice required to implement the control (qualitative measure).*	*Quantum of impact/risk that could be averted (measured in terms of reduction of likelihood, consequence and current risk rating) 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 # provided.*

ALARP Statement:

*Made on the basis of the environmental risk assessment outcomes, use of the relevant tools appropriate to the decision type (**Section 2.3.3** and **Figure 2-3**) and a proportionality assessment. Regulation 10A(b).*

Demonstration of Acceptability
Acceptability Criteria and Assessment
Impact Significance Level / Risk Consequence levels for receptors are within acceptable bounds of the OPP: ***Adoption of relevant OPP EPOs and controls:*** ***Internal/external context and other requirements specific to this EP Petroleum Activities Program:***
Acceptability Statement: Outcomes of the impact assessment in comparison to OPP and ALARP demonstration.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO# S: *Specific performance which addresses the legislative and other controls that manage the*	***C#*** *Identified control adopted to ensure the impacts and risks*	P**S#**	**MC#** Measurement criteria for determining

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
activity and against which performance by Woodside in protecting the environment will be measured. M: *Performance against the outcome will be measured by measuring implementation of the controls via the measurement criteria.* 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 and the potentially impacted environmental value.* T: *The outcome will state the timeframe during which the outcome will apply or by which it will be achieved.*	*are continuously reduced to ALARP.* Regulation 13(5)(c).	Statement of the performance required of a control measure. Regulation 13(7)(a)	whether the outcomes and standards have been met. Regulation 13(7)(c)

6.5 Potential Environment Risks Not Included Within the Scope of this Environment Plan

The ENVID identified environmental risks that were assessed as not being applicable within or outside the PAA as a result of the Petroleum Activities Program and, therefore, were determined to not form part of this EP. These are described in the next sections for information only.

6.5.1 Shallow/Near-shore Activities

The Petroleum Activities Program is located in water depths greater than 100 m and at a significant distance from nearest landfall. Consequently, risks associated with shallow/ nearshore activities such as vessel anchoring, and risks of grounding were assessed as not credible.

6.5.2 Dewatering of Subsea Infrastructure

Planned discharges associated with FCG, hydrotest and leak testing of the flowlines and risers etc. during subsea installation activities are outlined in **Table 3-7** and **Table 3-8** and assessed in **Section 6.7.6**. Dewatering will be required prior to commissioning of the infrastructure, but will be conducted under a Scarborough Project Offshore Facility and Trunkline (Operation) EP. Dewatering discharges are therefore excluded from the scope of this EP.

6.5.3 Generation of Noise from Helicopters and ROV

It is not credible that airborne noise from helicopter transfers would add to levels of underwater noise emanating from project vessels and positioning equipment to any extent. Similarly, it is not credible that noise from ROV operations at the seabed in approximately 900–1000 m water depth would add to levels of noise emanating from project vessels just below the sea surface, or noise emissions from transponders on the seabed, to any extent. Noise emissions from these other sources would not add to cumulative sound fields from project vessel and transponders to any discernible extent. As such noise emissions from these sources have not been considered in **Section 6.7.3**.

6.5.4 Loss of Containment of Existing Subsea Infrastructure

As described in **Section 4.9.6**, existing subsea infrastructure may be present in the PAA during installation of subsea infrastructure (i.e. Xmas trees installed during the Scarborough drilling and completions program). There is therefore a risk (albeit low likelihood) of dropped objects resulting in damage to a Xmas tree and loss of containment. Loss of containment from a Scarborough well during drilling is assessed in Section 6.8.3 of the Scarborough Drilling and Completions EP. This is considered a worst-case loss of containment scenario and is greater than the credible spill volume from a completed well. The assessment in the Drilling and Completions EP details the control measures associated with an unplanned release from a well. This risk is therefore not assessed again as part of this EP. However, relevant control measures and performance outcomes, standards and measurement criteria that apply to the prevention of dropped objects for this Petroleum Activities Program are identified in **Section 6.8.6**. Additional controls for operating the project vessels are provided throughout **Sections 6.7** and **6.8** of this EP.

6.6 Indirect Impacts

For the proposed Petroleum Activities Program, the potential 'indirect' environmental impacts and risks evaluated are those associated with mobilisation/demobilisation of project vessels to the PAA, which have been considered in the environmental impact assessment in **Sections 6.7** and **6.8**.

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

The extraction of Scarborough gas for onshore processing is not included in this Petroleum Activities Program. Subsequent and future petroleum activities must first be authorised under the OPGGS(E)R and implemented before Scarborough gas is able to be extracted for onshore processing. Therefore, any indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this Petroleum Activities Program, but will be evaluated in future Scarborough EPs as appropriate. **Section 1.10.2.1** outlines the list of broader Scarborough Development activities, which will be addressed in EPs submitted to NOPSEMA for assessment.

Table 6-3: Environmental Risk analysis and summary

Aspect	EP Section	Risk Rating				Acceptability
		Impact/ Consequence	Potential Impact/Consequence Level	Likelihood	Current Risk Rating	
Planned Activities (Routine and Non-routine)						
Physical Presence – Disturbance to Benthic Habitat from subsea infrastructure activities	**6.7.1**	D	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Physical Presence – Interaction with other marine users	**6.7.2**	E	Slight, short-term impact (<1 year) to a community or area/item of cultural significance.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Routine Acoustic Emissions – Generation of Noise from Project Vessels	**6.7.3**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Routine Light Emissions: External Lighting on Project Vessels	**6.7.4**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Routine Atmospheric and Greenhouse Gas Emissions	**6.7.5**	F	Environment – No lasting effect (less than one month); localised impact not significant to environmental receptors.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Routine and Non-Routine Discharges: Subsea Infrastructure Installation	**6.7.6**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Routine and Non-Routine Discharges: Project Vessels	**6.7.7**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**

Aspect	EP Section	Risk Rating				Acceptability
		Impact/ Consequence	Potential Impact/Consequence Level	Likelihood	Current Risk Rating	
Unplanned Activities (Accidents, Incidents, Emergency Situations)						
Unplanned Hydrocarbon Release: Vessel Collision	**6.8.2**	D	Moderate, medium-term impact (2–10 years) on ecosysytems, species, habitat or physical or biological attributes	1	M	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Unplanned Hydrocarbon Release: Bunkering	**6.8.3**	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	1	M	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Unplanned Discharge: Chemicals and Minor Hydrocarbon Spills (Deck and Subsea spills)	**6.8.4**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	1	L	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Unplanned Discharge: Hazardous and Non – Hazardous Solid Waste	**6.8.5**	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	0	L	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Physical Presence (Unplanned): Seabed Disturbance	**6.8.6**	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	1	M	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Physical Presence (Unplanned): Invasive Marine Species	**6.8.7**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	0	L	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Physical Presence (Unplanned): Collision with Marine Fauna	**6.8.8**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	1	L	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**

6.7 Planned Activities (Routine and Non-Routine)

6.7.1 Physical Presence – Seabed Disturbance

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.6 –Physical Presence – Seabed Disturbance		
Context		
Relevant Activities Gravimetry – **Section 3.9** Subsea Infrastructure Installation – **Section 3.10** FPU Mooring Pre-Lay – **Section 3.10.3** ROV Operations – **Section 3.8.3** Underwater positioning – **Section 3.8.5** Marine Growth Removal – **Section 3.8.6** Contingency Activities – **Section 3.11**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Physical Environment – **Section 4.3** Habitats and Biological Communities – **Section 4.5**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Installation of concrete pads for gravimetry surveys		✓	✓		✓			A	D	-	-	GP PJ	Broadly Acceptable	EPO 1, 2
Installation of subsea infrastructure		✓	✓		✓									
Pre-lay of FPU mooring		✓	✓		✓									
ROV operations near the seabed (including localised sediment relocation)		✓	✓		✓									
Placement and retrieval of seabed transponders (DP vessels)		✓	✓		✓									
Removal of marine growth from infrastructure.		✓	✓		✓									

Contingency cut and removal of flowline section in the event of a wet buckle		✓	✓		✓									
Span rectification		✓	✓		✓	✓	✓	A	E	-	-			

Description of Source of Impact/Risk

Gravimetry

Approximately 220 concrete pads (up to a maximum of 265) will be installed on the seabed in preparation for conducting gravimetry surveys. The pads are conical frustum-shaped, approximately 1.6 m in diameter, and will be placed approximately 2 km apart, having a cumulative seabed footprint of approximately 530 m^2. The pads will remain on the seabed for the operating life of the Scarborough field. The baseline gravimetry survey will involve the temporary placement of a passive gravity meter, sequentially on each concrete pad by ROV, and temporary deployment of tide gauges on the seabed. The ROV will stand off during the measurements and will land on the seabed. Approximately 39 tide gauges will be deployed at 13 locations, the footprint at each of the 13 locations will be approximately 1 m^2. The tide gauges will be recovered after the baseline survey is complete.

Installation of Subsea Infrastructure

Subsea infrastructure for the Scarborough field development will be installed across two campaigns as described in **Section 3.10**. In campaign 1 the following infrastructure is planned to be installed over a period of about three months:

- Thirteen mud mats (approximately 16 m x 9 m x 0.3 m) – to form base for six FLETs and seven ILTs.
- Up to twelve mud mats (approximately 8 m x 4 m x 3 m) – to form base for SDUs and UTAs.
- Seven flowline sleepers (approximately 30 m x 2.5 m x 1 m).
- Three lengths of flowline (16" diameter, 12,000–17,200 m long)
- Riser base manifold foundation (four suction piles with a rigid frame with dimensions of approximately 28 m x 15 m x 6 m.

In campaign 2 the following infrastructure is planned to be installed over a period of about 3 months:

- RBM (onto pre-installed foundation).
- Six risers and one dynamic umbilical (14″ diameter, 2,200–2,900 m long) – using a clump weight for initiation and pick-up rigging to facilitate future connection.
- Nine flexible jumpers (8″ diameter, 100–1000 m long).
- Eight static umbilicals (108–212 mm diameter, a total of approximately 42,000 m long).
- Two SDUs and an SDA (onto pre-laid mud mats).
- One rigid spool (32″ diameter, spread across area of approximately 51 m x 16 m x 3.6 m).

Pre-lay of FPU mooring

Twenty mooring legs for the FPU will be installed over a period of about 3 months. Each of the 20 legs will be composed of both wire and chain components, and are anchored with 23 m high by 8 m diameter suction piles, buried with only the top exposed above seabed. These piles and wire/chain will be wet stored on the seabed with attached recovery assistance, until connection to the FPU, which will be addressed by a future Environment Plan. This will result in disturbance of approximately 0.008 km^2 of seabed, contained within a 11 km^2 area.

ROV Operations

Pre- and post-lay surveys will be conducted by ROV to assess seabed condition pre-installation and confirm infrastructure location post-installation. The use of an ROV may result in temporary seabed disturbance and suspension of sediment as a result of working close to, or occasionally on, the seabed. ROV use close to or on the seabed is limited to that required for effective and safe subsea activities. The footprint of a typical ROV is about 2.5 m × 1.7 m (4.25 m^2).

Underwater Acoustic Positioning

Accurate positioning of infrastructure on the seabed is required, and therefore long base line (LBL) and/or ultra short baseline (USBL) acoustic positioning may be required in some instances (see **Section 3.8.5**). LBL transponders may be moored to the seabed by a clump weight (approximate footprint of <1 m^2), which are recovered by means of a hydrostatic release. If clump weights are used, they will be recovered.

Marine Growth Removal

Excess marine growth may need to be removed from subsea infrastructure using an ROV if accumulated between installation phases. Removing marine growth is undertaken via a high-pressure water and/or brushes or acid, by ROV.

Contingency Activities

In the event of a wet buckle during flowline installation, the damaged section of the flowline will need to be removed by localised excavation with an ROV (to allow the cutting tool to get into place), cutting from the remainder of the flowline, and moving out of the flowline route. Upon completion of this activity, the remaining flowline will be recovered to the installation vessel and the damaged section of the flowline will be recovered by a pipeline recovery tool.

Span Rectification

In the event span rectification is required, grout bags would be placed under the span section; the empty bag moved into position using ROV, then filled with grout supplied from a mixing and pumping spread on the vessel via a downline. Small, prefilled bags may be installed using ROV or lowered to the seabed using a vessel crane. Typical grout volumes depend on the size of the span and may vary in weight from about 200–2000 kg per span.

Detailed Impact Assessment

Assessment of Potential Impacts

Water quality

Elevations in turbidity will be intermittent and temporary in nature depending on the phase of the activity (e.g., during installation, and/or ROV use etc.), and are not expected to occur throughout the two campaigns. Further the sediment dispersed during these activities is naturally occurring and will settle under existing hydrodynamic conditions.

Epifauna and Infauna

The PAA is located in water depths of approximately 900–1000 m (refer to **Section 3.5**). Marine life, such as deep water benthic communities epifauna and infauna (living on and in the sediment dominated habitat), may be impacted from the permanent placement of infrastructure, or placement of temporary infrastructure on the seabed. Permanent infrastructure will be present for the duration of field life and will result in the displacement and/or permanent loss of epifauna and infauna within the physical footprint. Permanent infrastructure includes gravimetry pads; flowlines, umbilicals and associated structures (including mud mats); RBM and foundation; and FPU mooring legs; and span rectification structures. Temporary infrastructure and equipment will be removed from the field upon completion of installation activities and includes the initiation suction pile and leader wire for flowline lay initiation; installation aids (i.e. transponder arrays, frames); wet-storing of dynamic umbilicals and risers; and ROV operations) on the seabed.

Disturbance to the seabed can alter the physical seabed habitat conditions, resulting in epifauna and infauna community changes (Newell et al., 1998). The seabed of the PAA is characterised by sparse marine life dominated by mobile organisms (ERM, 2013). The benthic biota are predominantly deposit feeders such as epifauna (living on the seabed): shrimp (crustaceans) and sea cucumbers (echinoderms), and infauna (living within the surface sediments) small, burrowing worms (polychaetes) and crustaceans (ERM, 2013) (**Section 4.5**). The PAA is not located within or adjacent to an AMP.

Habitat modification as a result of loss of habitat within the direct footprint of infrastructure, or localised seabed disturbance in proximity to infrastructure during installation activities. Benthic communities may be reduced or altered, leading to a highly localised impact to any epifauna and infauna benthic communities present. Potential impacts include; burial or smothering of benthic biota from localised sediment deposition, particularly to sessile epifauna such as sea pens and infauna (polychaetes), and sediment coating resulting from elevated turbidity/TSS potentially causing clogging or damage to the physiological functioning of certain biota (sea pens, polychaetes) reliant on external respiratory and feeding structures. The deep-water environment is not oxygen saturated and oxygen levels in the water column at depth are substantially reduced as compared to the upper surface layers. Deep water benthic biota are adapted to such conditions which also include zero light and reduced temperature. Changes in oxygen levels resulting from the seabed infrastructure installation will be of short duration and temporary. Furthermore, sediment quality sampling indicated low organic content (**Section 4.4**) and further depletion of oxygen levels due to organically rich sediment disturbance is not predicted. The seabed sediments of the PAA contain low levels of contaminants such as metals and no hydrocarbons (**Section 4.4**) so no toxicological impacts to benthic biota from disturbed sediments is predicted. The scale and magnitude of potential impacts will be limited to the offshore seabed infrastructure physical footprint area, representing a relatively small proportion of the total area of deep water habitat and associated benthic communities of the PAA, that are known to be present in the wider region.

No threatened or migratory species, or ecological communities (as defined under the EPBC Act), were identified in the benthic communities during studies completed in the PAA (ERM, 2013). The epifauna and infauna benthic communities known to exist in the PAA are likely to be well represented elsewhere in the region, with impacts restricted to a highly localised proportion of benthic communities. The magnitude of potential impacts to epifauna and infauna from seabed disturbance during activities associated with the Petroleum Activities Program is Slight.

KEFs

The Exmouth Plateau KEF overlaps the PAA and seabed disturbance may lead to a highly localised change in habitat and water quality. Loss of habitat within the direct footprint of infrastructure represents a small area relative to the large extent of the KEF and additional disturbance during installation activities will be short-term, associated with the temporal extent of installation activities. These potential impacts are unlikely to impact on the ecological value of the KEF, which include enhanced productivity along the northern and southern boundaries of the Plateau that attract

small pelagic species and nekton, as well as larger predators such as billfishes, sharks and dolphins (Brewer et al. 2007).

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Water Quality	Change in water quality	Low value	Slight	Negligible (F)
Epifauna and Infauna	Injury/mortality to fauna	Low value	Slight	Negligible (F)
KEFs	Change in habitat	High value habitat	Slight	Minor (D)

Overall Impact Significance Level: The overall impact significance level for disturbance to benthic habitat from subsea infrastructure installation activities is D based on a minor impact to the high value receptor (KEFs). The impact significance levels for individual receptors are consistent with the level in the OPP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
An ROV inspection will be undertaken, post installation, to confirm all installation aids have been removed.	F: Yes CS: ROV inspections post installation standard practice	In accordance with OPGGS Act Section 572 all equipment is removed when no longer in use.	Legislative requirement	Yes C 1.1
Good Practice				
Infrastructure will be placed on the seabed within the design footprint using positioning technology	F: Yes. CS: Standard practice.	Positioning infrastructure within the design footprint will reduce the potential magnitude of impact.	Benefits outweigh cost/sacrifice.	Yes C 1.2
Environmental monitoring of the seabed prior to, and following the Petroleum Activities Program to assess any impacts to seabed.	F: Yes. CS: Significant. Monitoring of the seabed, particularly the deep waters of the PAA, would have significant additional costs to obtain and analyse data with the spatial resolution to accurately assess changes to the seabed habitat.	Existing understanding of the benthic habitat within the PAA (based on previous surveys) confirm that the benthic habitat is sparse and well represented across the region. Impacts to benthic habitat from the Petroleum Activities Program are expected to be limited.	Control grossly disproportionate. Monitoring will not reduce the consequence or likelihood of any impacts to the seabed, and the cost associated with the level of monitoring required to accurately assess any impacts greatly outweighs the benefits gained.	No
Reduce the number of gravimetry pads.	F: No. CS: Gravimetry pads are essential as they ensure that gravimetry measurements are acquired at the same position on the seabed in consecutive surveys. The number of pads is already limited to only that required to conduct the work effectively and safely. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement – Eliminate				

Do not use ROV close to, or on, the seabed.	F: No. The use of ROVs (including work close to or occasionally landed on the seabed) is critical as the ROV is the main tool used to guide and manipulate equipment during drilling. ROV usage is already limited to only that required to conduct the work effectively and safely. Due to visibility and operational issues ROV work on or close to the seabed is avoided unless necessary. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No

Professional Judgement – Substitute

No additional controls identified.

Professional Judgement – Engineered Solution

No additional controls identified.

ALARP Statement:

On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the impacts of seabed disturbance from activities associated with the Petroleum Activities Program. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.6.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:**

- Overall impact significance levels for individual receptors are consistent with the levels rated in the OPP.
- EPOs and controls in the OPP that are relevant to disturbance to benthic habitats have been adopted.
- There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.

Acceptability Statement:

The impact assessment has determined that, given the adopted controls, the Petroleum Activities Program is unlikely to result in an impact significance level greater than Minor. Further opportunities to reduce the impacts have been investigated above. The adopted controls are considered consistent with industry good practice and meet the requirements of Woodside relevant systems and procedures.

The potential impacts are considered broadly acceptable if the adopted controls are implemented. Activities do not have a significant impact on MNES (**Section 2.4.2**) including those with an Indigenous connection with, or traditional use in nearshore areas as defined in **Section 4.9.1** Therefore, Woodside considers the adopted controls appropriate to manage the impacts of disturbance to benthic habitat to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	**Adopted Control(s)**	**EPS**	**MC**
EPO 1 Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results. **EPO 2** Undertake the Petroleum Activities Program in a manner that prevents a substantial change to water quality that may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**C 1.1** An ROV inspection will be undertaken, post installation, to confirm all installation aids have been removed.	**PS 1.1.1** All installation aids are removed.	**MC 1.1.1** As-built report confirms wet storage of all installation aids are removed.
	C 1.2 Infrastructure will be placed on the seabed within the design footprint using positioning technology	**PS 1.2.1** Infrastructure will be positioned in the planned location[10] where impacts have been assessed.	**MC 1.2.1** As-built surveys verify installation of equipment within acceptable tolerance[3].
		PS 1.1.2 Transponder equipment, including clump weights/frames, will be removed at the end of the Petroleum Activity Program.	**MC 1.1.2** Records demonstrate removal of transponder equipment.

[10] Acceptable tolerance is considered to be ±200 m, given the homogenous and low sensitivity habitat.

6.7.2 Physical Presence – Interactions with Other Marine Users

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.5 – Physical Presence – Interactions with Other Marine Users		
Context		
Relevant Activities Vessel Operations – **Section 3.7** Support Operations – **Section 3.8** Subsea Infrastructure Installation – **Section 3.10** FPU Mooring Pre-Lay – **Section 3.10.3**	**Existing Environment** Socio-economic Values – **Section 4.9**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	*Environmental Value Potentially Impacted*							*Evaluation*						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (inc. odour)	Ecosystems / Habitat	Species	Socio-economic	Decision Type	Impact/Consequence	Likelihood	Current Risk Rating	ALARP Tools	Acceptability	Outcome
Interaction with other marine users – Project vessels and ROV interfering with or displacing third party vessels and/or aircraft (commercial fishing and commercial shipping, defence)							✓	A	E	-	-	LCS GP PJ	Broadly Acceptable	EPO .3, 4
Presence of subsea infrastructure interfering with or displacing third party vessels (commercial fishing)							✓							

Description of Source of Impact/Risk

Vessel Operations

Several vessel types will be required to complete the activities associated with the Petroleum Activities Program (refer to **Section 3.7**). Vessels do not plan to anchor within the PAA during activities and instead maintain positioning using DP. The physical presence and movement of project vessels within the PAA has the potential to displace other marine users. All vessels will display navigational lighting and external lighting on a 24-hour basis, as required for safe operations. The Petroleum Activities Program will not be executed as a single campaign and may not be executed in a consecutive sequence, therefore the presence of vessels may occur at any time during the five-year period of the EP.

Temporary Petroleum Safety Zones will be established around operating vessels. These will be confirmed during Safety Case development and notifications to mariners will be issued at the time of the activity.

Physical presence of subsea infrastructure

Subsea infrastructure installed as part of the Petroleum Activities Program will be located within the PAA as described in **Sections 3.9** to **3.10.3**. The physical presence of this infrastructure will remain for the duration of field life. The infrastructure will be installed on the seabed and in some cases extend up to several metres above the seabed (e.g. 6 m for the RBM). The 20 suction piles will extend approximately 1.5 m above the seabed and be connected to wire and chain that will be wet-stored on the seabed until connection to the FPU.

Detailed Impact Assessment

Assessment of Potential Impacts

Commonwealth and State Managed Fisheries

Five Commonwealth managed fisheries and eight State managed fisheries overlap the PAA (refer to **Section 4.9.2**). Potential impacts to commercial fishers depend on the use of the area by fishers, in addition to the temporal and spatial extent of the presence of vessels and facilities/infrastructure.

Potential impacts to commercial fisheries include damage to fishing and loss of commercial catch due to displacement from fishing grounds. Damage to trawl nets could occur if they catch or snag on subsea infrastructure. One trawl fishery, the Western Deepwater Fishery overlaps the PAA. However, trawl frequency assessment has shown that fishing activity occurs further south of the PAA, on the western edge of the 200 m isobath between Shark Bay and Ningaloo. Therefore, trawl activity within the PAA is not expected.

The presence of vessels in the PAA will present a surface hazard to fishing vessels. However, given there is no recorded effort within the PAA in the last 5 years (**Table 4-19**) and the distance offshore, Woodside considers a possibility of interaction with commercial fisheries within the PAA unlikely. As such, any displacement of commercial fisheries due to activities in the PAA are not expected to impact commercial fishing activities or the economic viability of the fisheries. In addition, the concrete pads to be used for gravimetry have been designed to be minimise snag or catching of trawl nets for any possible future interactions.

Tourism and Recreation

Tourism and recreation within the PAA are expected to be limited by the distance offshore and water depths. Consultation did not identify any key recreational fishing activity within the PAA. Given the location, and the temporary nature of activities, impacts to tourism and recreational activities are not expected, and have not been evaluated further.

Shipping

The closest major shipping channel is approximately 35km from the PAA . Shipping activity is expected to be low. Vessel traffic data shows that the majority of vessel movements occur to the south-east of the PAA. Given the temporary nature of the activities and the low level of shipping activity within the PAA, impacts to shipping are unlikely.

Industry

The NWS is an area of active oil and gas exploration and production. The closest facility to the PAA is the Woodside Pluto facility (approximately 160 km to the east). Displacement of, or interference with, other oil and gas activities are not expected within the PAA. Impacts to industry are therefore unlikely.

Defence

Defence activities in the vicinity of the PAA may include Naval vessel traffic and Air Force training exercises. Neither of these types of activities are expected to be a consistent presence in the area. The PAA is on the outer extent of the training area associated with the Learmonth Air Force Base. Defence stakeholders were notified, and no known defence activities are planned (**Section 5**). Any potential interaction is expected to be minimal and not significantly different from interaction with other facilities within the northwest region.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Commonwealth Managed Fisheries	Changes to the function interests or activities of others	High value marine user	No Lasting Effect	Slight (E)
State Managed Fisheries		High value marine user	No Lasting Effect	Slight (E)
Commercial shipping		High value marine user	No Lasting Effect	Slight (E)
Industry		Medium value marine user	No Lasting Effect	Negligible (F)
Defence		High value marine user	No Lasting Effect	Slight (E)

Overall Impact Significance Level: The overall impact significance level for Interaction with other marine users is slight based on no lasting effect to high value socio-economic receptors. The impact significance levels for individual receptors are consistent with the levels in the OPP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Vessels to adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.	F: Yes. CS: Minimal cost. Standard practice.	The act regulates ship related activities and invokes certain requirements of MARPOL. Vessels (relevant to class) will adhere to requirements.	Benefits outweigh cost/sacrifice. Control is also Standard Practice	Yes **C 2.1**
Establishment of temporary exclusion zones by relevant vessels which are communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Establishment of temporary exclusion zones around vessels reduces the likelihood of interaction with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice	Yes C 2.2
Good Practice				
Australian Hydrographic Office (AHO) will be notified of activities and movements no less than four working weeks prior to commencement of the Petroleum Activities Program.	F: Yes. CS: Minimal cost. Standard practice.	Notification of AHO will enable them to update maritime charts thereby reducing the likelihood of interaction with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 2.3**
Notify relevant government departments, fishing industry representative bodies, fishery licence holders, and other oil and gas operators (if agreed during consultation) of activities prior to commencement and upon completion of activities.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the Petroleum Activities Programme to other marine users ensures they are informed and aware, thereby reducing the likelihood of interference with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 2.4**
Notify AMSA Joint Rescue Coordination Centre (JRCC) of activities and movements 24–48 hours before operations commence.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the Petroleum Activities Programme to other marine users ensures they are informed and aware, thereby reducing the likelihood of interference with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 2.5**
Undertake consultation with relevant stakeholders for activities and movements that commence more than a year after EP acceptance	F: Yes CS: Minimal cost. Standard Practice	Communicating the Petroleum Activities Program to other marine users ensures they are informed and aware, thereby reducing the likelihood of	Benefits outweigh cost/sacrifice. Control is also Standard Practice	Yes **C 2.6**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
		interfering with other marine users.		
Notify Defence of activities no less than five weeks before the scheduled activity commencement date	F: Yes CS: Minimal cost. Standard Practice	Communicating the Petroleum Activities Program to other marine users ensures they are informed and aware, thereby reducing the likelihood of interfering with other marine users.	Benefits outweigh cost/sacrifice.	Yes **C 2.7**
Professional Judgement – Eliminate				
Limit subsea installation activities to avoid peak shipping and commercial fishing activities.	F: No. Shipping occurs year-round and cannot be avoided. SIMOPS with fishing seasons cannot be eliminated as exact timings for all activities are not confirmed. CS: Not considered – control not feasible	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A; **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the impacts of the physical presence of the Petroleum Activities Program on other users. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.5.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to the interaction with other users have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.
Acceptability Statement: The impact assessment has determined that, given the adopted controls, the Petroleum Activities Program is unlikely to result in an impact significance level greater than Slight.

Demonstration of Acceptability
The adopted controls are considered consistent with industry good practice and professional judgement and meet the requirements and expectations of Australian Marine Orders, AMSA, DPIRD, DOD and AHO identified during impact assessment and stakeholder consultation. Further opportunities to reduce the impacts have been investigated above. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts from the physical of the Petroleum Activities Program to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 3 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on the sustainability of commercial fishing.	**C 2.1** Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* and any subsequent Marine Orders.	**PS 2.1.1** Activity support vessels compliant with Navigation Act and Marine Order 21 (Safety of navigation and emergency procedures) 2012	**MC 2.1.1** Marine assurance inspection records demonstrate compliance with standard maritime safety procedures
EPO 4 Undertake the Petroleum Activities Program in a manner that does not interfere with other marine users to a greater extent than is necessary for the exercise of right conferred by the titles granted.	**C 2.2** Establishment of temporary exclusion zones by relevant vessels which are communicated to marine users.	**PS 2.2.1** No entry of unauthorised vessels within temporary exclusion zones	**MC 2.2.1** Records demonstrate breaches by unauthorised vessels within the temporary exclusion zone are recorded.
			MC 2.2.2 Consultation records demonstrate that AHO has been notified prior to commencement of the activity to allow generation of navigation warnings (Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) (including AUSCOAST warnings where relevant)), which communicate safety exclusion zones to marine users.
	C 2.3 Notify AHO of activities and movements no less than four working weeks prior to commencement of the Petroleum Activities Program.	**PS 2.3.1** Notification to AHO of activities and movements to allow generation of navigation warnings (Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) (including AUSCOAST warnings where relevant)).	**MC 2.2.2** **See above**
	C 2.4 Notify relevant government departments, fishing industry representative bodies, fishery licence	**PS 2.4.1** Notification to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence	**MC 2.4.1** Consultation records demonstrate that stakeholders have been notified prior to

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	holders and other oil and gas operators (if agreed during consultation) of activities prior to commencement and following completion of activities.	holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5.	commencement and following completion of activities.
	C 2.5 Notify AMSA JRCC of activities and movements 24–48 hours before operations commence.	**PS 2.5.1** Notification to AMSA JRCC to prevent activities interfering with other marine users. AMSA's JRCC will require the vessel's details (including name, callsign and Maritime Mobile Service Identity (MMSI)), satellite communications details (including INMARSAT-C and satellite telephone), area of operation, requested clearance from other vessels and need to be advised when operations start and end.	**MC 2.5.1** Consultation records demonstrate that AMSA JRCC has been notified prior to commencement of the activity within required timeframes.
	C 2.6 Notify relevant stakeholders for activities within the Petroleum Activities Program that commence more than a year after EP acceptance.	**PS 2.6.1** Stakeholders will be notified no less than four working weeks prior to scheduled activity commencement date.	**MC 2.6.1** Records demonstrate relevant stakeholders have been consulted.
	C 2.7 Notify Defence of activities no less than five weeks before the scheduled activity commencement date.	**PS 2.7.1** Notification to Defence five weeks prior to the scheduled commencement date.	**MC 2.7** Records demonstrate that Defence has been notified prior to commencement of the Petroleum Activities Program within the required timeframes.

6.7.3 Routine Acoustic Emissions

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.4 – Routine Acoustic Emissions		
Context		
Relevant Activities Vessel Operations – **Section 3.7** Support Operations – **Section 3.8**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Marine Fauna of Conservation Significance – **Section 4.6**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	*Environmental Value Potentially Impacted*							*Evaluation*						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (inc. odour)	Ecosystems / Habitat	Species	Socio-economic	Decision Type	Impact/Consequence	Likelihood	Current Risk Rating	ALARP Tools	Acceptability	Outcome
Generation of acoustic signals from vessels during normal operations						✓		A	E	-	-	PJ	Broadly Acceptable	EPO 5,6,7
Generation of acoustic signals from positioning equipment (transponders)						✓								
Generation of acoustic signals from geophysical sources during surveys						✓								
Generation of acoustic signals during subsea installation activities i.e. marine growth removal, sediment relocation for wet buckle recovery tool etc.						✓								

Description of Source of Impact/Risk

The Petroleum Activities Program may not be executed as a single campaign or in a consecutive sequence, therefore acoustic emissions may occur within the PAA at any time during the period of the EP. **Table 6-1** shows likely sequencing of survey and installation activities. This has been used to inform the worst-case credible noise propagation scenario for modelling as well as cumulative impact assessment as a result of concurrent operations, discussed below.

Project vessels and operation of DP

The project vessels will generate noise both in the air and underwater, due to the operation of thrusters, engines, propeller cavitation, etc. Vessels may use Dynamic Positioning (DP) where propellers and thrusters are used to hold position, rather than anchoring. These noises will contribute to and have the potential to exceed ambient noise levels which range from around 90 dB re 1 µPa (root square mean sound pressure level [rms SPL]) under very calm, low wind conditions, to 150 dB re 1µPa (rms SPL) under windy conditions (McCauley, 2005, Warren, 2023).

Vessels used for the Petroleum Activities Program are detailed in **Table** 3-5. 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 (Jiménez-Arranz et al., 2020). Sound levels tend to be greatest when engaging the throttle or thrusters, such as use of DP or when vessels are operating under load, compared with

slow moving or idling vessels (Salgado Kent et al. 2016). The greatest sound levels are likely to be associated with vessels using DP thrusters to maintain position on station.

Vessels produce low frequency sound (i.e. below 1 kHz) from the operation of machinery, hydrodynamic flow sound around the hull and from propeller cavitation, which is typically the dominant source of sound (Ross, 1987, 1993). Vessels in the 50–100 m size class (e.g. supply ships, crew boats, research vessels) produce broadband source levels in the 165–180 dB re 1 µPa SPL range (Gotz et al., 2009). In comparison, underwater sound levels generated by large ships can produce levels exceeding 190 dB re 1 µPa (Gotz et al., 2009). McCauley (1998) measured underwater broadband noise equivalent to approximately 182 dB re 1 µPa at 1 m (rms SPL) from a support vessel holding station using DP in the Timor Sea; it is expected that similar noise levels will be generated by vessels used for this Petroleum Activities Program. Similarly, Hannay et al. (2004) and McCauley (2005) have measured source level for support vessel with DP of 186 dB re 1 µPa at 1 m.

The loudest single activity covered under this EP is expected to be the mooring pre-lay, which involves an HCV with the potential for an HLV alongside intermittently for support. Concrete pad installation / mooring pre-lay survey and gravimetry baseline survey will be executed with single vessels, which are smaller than the HCV and HLV. Subsea Installation Campaigns 1 and 2 will be executed with 2 vessels plus intermittent support vessels; although this is a greater number of vessels compared to the mooring pre-lay activity, the individual vessels are smaller (**Table** 3-4) and will be spaced further apart for their installation activities (e.g. PV will be laying flowlines away from where the LCV is installing other subsea infrastructure).

Underwater positioning equipment

An array of long baseline (LBL) and/or ultra-short baseline (USBL) transponders may be installed on structures or the seabed for positioning.

Transponders typically emit pulses (impulsive noise) of medium frequency sound, generally within the range 21 to 31 kHz. The estimated SPL would be 180 to 206 dB re 1 µPa at 1 m (Jiménez-Arranz et al., 2017). Transmissions are not continuous but consist of short ‘chirps’ with a duration that ranges from 3 to 40 milliseconds. Transponders will not emit any sound when on standby.

Geophysical survey activities

The noise emitted during geophysical survey activities is generated by a combination of the survey equipment and the survey vessel. Geophysical survey activities may occur within the PAA during pre- and post-lay surveys. A range of geophysical sources can emit pulses (impulsive noise) with frequency outputs ranging from 10 Hz (low end of refraction system) to 900 kHz (side scan sonar). The survey methods may include multibeam echo sounders (MBES), side scan sonar (SSS), pipe trackers, and magnetometer.

Sound pressure levels (SPL) for MBES typically range from 210 to 245 dB re 1 µPa @ 1 m, and SSS typically range from 200–235 dB re 1µPa SPL (Jiménez-Arranz et al., 2020). The frequencies range from about 75 to 900 kHz (Jiménez-Arranz et al., 2020).

Cumulative noise sources

A number of vessels may be operating concurrently during the Petroleum Activities Program, as described in **Table 6-4.** Planned to occur at the same time are execution of concrete pad installation / mooring pre-lay survey and subsea infrastructure installation campaign 1, as are the gravimetry baseline survey and subsea infrastructure installation campaign 2 at a separate time. Intermittent visits from support vessels to transport equipment and materials between the activity vessels and port will also occur throughout each of the activities. Additional concurrent operations in the PAA (covered under separate EPs) include drilling and completions, and trunkline installation.

Table 6-4: Concurrent activities contributing to cumulative underwater vessel noise

Scenario	Planned Concurrent Activities	Approximate Timing & Duration	Vessels
1	Concrete pad installation & mooring pre-lay survey Subsea installation campaign 1 Drilling and completions*	Nov - Dec 2023 2 months for (concrete pad installation & mooring pre-lay survey) Up to 3 months for other activities	LCV PV + LCV + intermittent support vessel DP MODU + supply vessel
2	Mooring pre-lay Drilling and completions* Trunkline installation** (Unplanned) Subsea installation campaign 1	Feb - Apr 2024 • 4 weeks (Trunkline installation in PAA) • Up to 3 months for other activities	HCV + intermittent support vessel DP MODU + supply vessel PV + B-type + intermittent support vessel PV + LCV + intermittent support vessel

3	Gravimetry baseline survey Subsea installation campaign 2 Drilling and completions*	Nov 2024 – Jan 2025 2 months (gravimetry baseline survey) Up to 3 months for other activities	Survey vessel or LCV LCV + HLV + intermittent support vessel DP MODU + supply vessel

**Covered under Scarborough Drilling & Completions EP*

***Covered under Seabed Intervention & Trunkline Installation EP*

****Duration of concurrent activities overlap only, not indicative of timing of the whole activity*

Activities utilising single vessels (i.e. concrete pad installation / mooring pre-lay survey, gravimetry baseline survey) are not expected to contribute significantly to the cumulative noise footprint, due to their relatively small size, short activity duration and separation distances from other activities.

Due to the low likelihood of Subsea Installation Campaign 1 occurring in Feb – April 2024, and the expected insignificant contribution of each of the vessels to the cumulative noise scenario (due to relative size and separation distance), this activity has not been included in the worst-case credible impact assessment.

The Scarborough Seabed Intervention and Trunkline Installation EP includes justification of the worst-case credible scenario associated with trunkline installation.

As such, the worst-case credible scenario is considered to be during concurrent execution of the mooring pre-lay with an HCV and supporting HLV, drilling with MODU and support vessel, and trunkline installation with a PV undertaking pipelay operations and a B-Type vessel and OSV alongside the PV (i.e. Scenario 2 in **Table 6-4**). This is the case used for the following cumulative assessment of potential impacts. If any changes are made to the vessel arrays, the change to impacts of acoustic emissions will be assessed as per Woodside's Management of Change process (**Section 7.6**).

Detailed Impact Assessment

Assessment of Potential Impacts

Receptors

The PAA is located in water depths of approximately 900–1000 m (refer to **Section 3.5**). The fauna associated with this area will be predominantly pelagic species of fish, with migratory species such as cetaceans and marine turtles potentially occurring in the area seasonally (**Section 4.6**). Noise interference is a key threat to a number of migratory and threatened cetaceans and marine turtles identified as potentially occurring within the PAA, including the pygmy blue whale. Relevant actions included in recovery plans for these species are outlined in **Section 6.9**.

A pygmy blue whale (PBW) migration BIA is located about 35 km east of the PAA (**Section 4.6.3**). A broader distribution BIA overlaps the PAA. As described in **Section 4.6.3**, the migration BIA represents the area in which migrating whales are predominantly expected to occur. However, based on satellite tagging data occasional whales may occur further west and could overlap the PAA. Individual pygmy blue whales may therefore occasionally transit the PAA during April to July and October to January during their seasonal migrations.

A humpback whale migration BIA is located about 156 km south-east of the PAA, and migrating whales may be present between May and November. Given the distance from the migration BIA, humpback whales are expected to be a rare occurrence in the waters of the PAA.

The nearest marine turtle internesting buffer BIA for the flatback turtle is located about 165 km east of the PAA at the Montebello Islands. Given the water depths and distance from shore, the PAA does not represent suitable foraging or internesting habitat and therefore, marine turtle presence within the PAA is expected to be infrequent.

Animal movement and exposure modelling (ANIMAT modelling)

In addition to the acoustic modelling outlined above, Woodside commissioned JASCO to also perform an acoustic exposure analysis study for PBW within and beyond the migration BIA to investigate any potential effects on PBW migration from the Petroleum Activities Program, using the JASCO Animal Simulation Model Including Noise Exposure (JASMINE).

Sound exposure distribution estimates were determined by moving large numbers of simulated animals (animats) through a modelled time-evolving sound field, computed using the predicted sound source levels and sound propagation modelling outputs. This approach provides the most realistic prediction of the maximum expected root-mean-square SPL and the temporal accumulation of SEL that are considered the most relevant sound metrics for impact assessment. For the moving receivers (the animats) were set to simulate the real-world movements of migrating pygmy blue whales, both within the Migration BIA (restricted seeding) and beyond (unrestricted seeding). The behaviour of migrating pygmy blue whales was modelled to reflect animats transiting through the modelling area on a 230° track. This represents individuals migrating south, but exposure during northbound migration may be

expected to be similar if individuals were to transit through the modelling area. Forecasted diving behaviours were predicted from a range of satellite tagging data sources for both north and south-bound migrations (noting that more data was available during the northbound migration). The distribution of distances of animats predicted to be exposed to sound levels above threshold was used to calculate the 95th percentile exposure range (ER95%), and noise effect metrics included SEL24h and SPL (Stroot et al., 2023)

Marine Mammals/Cetaceans

Eight cetacean species may be present within the PAA, including LF cetaceans such as pygmy blue whales, and HF cetaceans such as sperm whales and orcas (**Section 4.6.3**). No species have BIAs (**Section 4.6.3** and **Figure 4-8**, **Figure 4-9**) that intersect the PAA; the distribution range to the west of the pygmy blue whale migration BIA, and recent satellite tracking data from Thums et. al (2022) is the primary consideration for potential noise emissions impacts.

Species Sensitivity and Thresholds

Marine mammals and especially cetaceans rely on sound for important life functions including individual recognition, socialising, detecting predators and prey, navigation and reproduction (Weilgart, 2007; Erbe et al., 2015; Erbe et al., 2018). Underwater noise can affect marine mammals in various ways including interfering with communication (masking), behavioural changes, a shift in the hearing threshold (PTS and TTS), physical damage and stress (Erbe, 2012; Rolland et al., 2012). There is little information available regarding call masking in whales (Richardson et al., 1995), although it has been suggested that an observed lengthening of calls in response to low-frequency noise in humpback whales and orcas may be a response to auditory masking (Fristrup et al., 2003; Foote et al., 2004). Exposure to intense impulsive noise may be more hazardous to hearing than continuous noise.

The thresholds that could result in a behavioural response, temporary threshold shift (TTS) and permanent threshold shift (PTS) for cetaceans as a result of continuous noise sources are presented in **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 for impulsive and continuous (non-impulsive sound sources).

It is important to note that for non-impulsive sound sources the defined thresholds are as follows:

Frequency-weighted accumulated sound exposure levels (SEL; LE,24h) from Southall et al. (2019) for the onset of permanent threshold shift (PTS) - 199 (LF cetaceans) and 198 (HF cetaceans) SEL24h (dB re 1 µPa².s) and temporary threshold shift (TTS) – 179 (LF cetaceans) and 178 (HF cetaceans) SEL24h (dB re 1 µPa².s) apply to marine mammals for non-impulsive sound sources.

Marine mammal behavioural threshold based on the current interim US National Oceanic and Atmospheric Administration (NOAA) (2019) criterion for marine mammals (LF and HF) of 120 dB re 1 µPa (SPL; Lp) for non-impulsive sound sources.

Table 6-5: Thresholds for PTS, TTS and behavioural response onset for low-frequency (LF) and high-frequency (HF) cetaceans for impulsive and continuous 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)***
LF cetaceans	183	168	160	199	179	120
HF cetaceans	185	170		198	178	

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

Results – Acoustic Modelling

Modelling of sound propagation loss for the HCV and HLV on DP (i.e. mooring pre-lay), in Operational Area, predicted that noise levels would drop below 120 dB re 1 µPa (behavioural response threshold for continuous noise sources) within 18.3 km. The modelling also estimated propagation of combined noise from the three concurrent activities (refer to Scenario 2, **Table 6-4**), and predicted combined noise levels would drop below 120 dB within 29.6 km (**Table 6-6**).

Considering the NMFS (2018) SEL24h TTS threshold criteria for LF cetaceans (179 dB re 1 µPa².s), TTS onset could occur within 3.7 km from the HCV and HLV on DP or 7.0 km from the combination of vessels (Stroot et al., 2023). For LF cetaceans, the maximum distance to the PTS onset threshold was 190 m for the HLV and HCV, and 210 m for the combined scenario (**Table 6-6**). However, as demonstrated by the animat movement modelling results below, PTS and TTS criteria exceedances are based upon exposure for 24-hours by a stationary receptor, which is not a realistic scenario with reference to known pygmy blue whale behaviour. The SEL24h criterion is a cumulative metric that reflects the dosimetric impact of sound energy accumulated over a 24-hour period and assumes that an animal is consistently exposed to such noise levels at a fixed location. The radii that correspond to SEL24h therefore represent an unlikely worst-case scenario for SEL-based exposure since, more realistically, marine fauna would not stay in the same location or at the same range for 24-hours (Stroot et al., 2023). It is highly unlikely that PTS and TTS thresholds would be exceeded and furthermore it is highly unlikely given the known movement behaviour of cetaceans including key migrating LF whale species such as the pygmy blue whale transiting through the Operational Area.

For HF cetaceans, TTS onset could occur within 130 m for both scenarios, and PTS threshold for HF cetaceans was not reached within the limits of the modelled resolution (20 m) for any scenario modelled.

Table 6-6: Maximum predicted horizontal distances (R_{max}) to PTS, TTS and behavioural response thresholds in cetaceans

Hearing group	Sound exposure threshold	R_{max} distance (km)	
		Mooring pre-lay activity	***Concurrent activities (Scenario 2, Table 6-4)***
PTS			
LF cetaceans	199 dB re 1 µPa².s (SEL24h)	0.19	0.21
HF cetaceans	198 dB re 1 µPa².s (SEL24h)	-	-
TTS			
LF cetaceans	179 dB re 1 µPa².s (SEL24h)	3.70	7.03
HF cetaceans	178 dB re 1 µPa².s (SEL24h)	0.13	0.13
Behavioural response			
LF cetaceans	120 dB re 1 µPa (SPL)	18.3	29.6
HF cetaceans			

A dash indicates the level was not reached within the limits of the modelled resolution (20 m).

Results – animat modelling

Table 6-7 presents the animat modelling (JASMINE) results for the concurrent activity scenario. For animats restricted to the Migratory BIA (restricted seeding) PTS, TTS and behavioural thresholds for pygmy blue whales were not reached within the limits of the modelled resolution. For animats not restricted to the Migratory BIA (unrestricted seeding), TTS onset probability of exposure of 46% within the 95th percentile exposure range (ER95%) only occurs if a pygmy blue whale remains within 0.03 km of the source for a 24 hr period. PTS onset probability of exposure of 7% within the 95th percentile exposure range (ER95%) only occurs if a pygmy blue whale remains within 0.01 km of the source for a 24 hr period. Single-exposure metrics, such as SPL, are not sensitive to changes in dwell time, but rather the distribution of noise within the water column and the use of the water column by the animat, and therefore ER95% tends to be comparable to that predicted by acoustic propagation modelling. The ER95% to the behavioural response SPL threshold was 22.5 km (Stroot et al., 2023).

Table 6-7**: Summary of animat simulation results for migrating pygmy blue whales indicating the maximum of the 95th percentile exposure ranges (in km). The maximum probability of animats being exposed above threshold within the $ER_{95\%}$ is also provided.**

Threshold			Unrestricted Seeding $ER_{95\%}$		Restricted Seeding $ER_{95\%}$	
Description		***Threshold level (dB)***	***Distance(km)***	***Probability of exposure (%)***	***Distance (km)***	***Probability of exposure (%)***
PTS	SEL24h	1991	0.01	7	-	-

TTS	SEL24h	1791	0.03	46	-	-
Behavioural response		1202	22.5	96	-	-

1 LF-weighted SEL24h (LE,24h; dB re 1 µPa2 ·s)

2 SPL (Lp; dB re 1 µPa)

Impact Assessment

As described in **Section 4.6.3**, the PBW migration BIA (about 35 km from the PAA) represents the area of core migratory routes for pygmy blue whales. The animat modelling demonstrates that Pygmy Blue Whales will not encounter PTS, TTS or behavioural response thresholds within the Migration BIA on their northbound and southbound migrations. This aligns with The Blue Whale Conservation Management Plan (Action Area 2), which states that anthropogenic noise in BIAs should be managed such that any blue whale continues to utilise the area without injury (Commonwealth of Australia, 2015a).

As demonstrated by the acoustic modelling, it is reasonable to expect that cetaceans may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activities Program. With respect to the western extent of the pygmy blue whale distribution range, as described in **Section 4.6.3**, the likelihood of encountering migrating or foraging pygmy blue whales is considered low. There is likely to be occasional individual or small groups transiting through the distribution range during the northbound or southbound migration seasons. Further, the PAA is surrounded by open water, with no restrictions (e.g. shallow waters, embayments) to an animal's ability to avoid the activities. Consequently, any pygmy blue whales transiting through the area, may deviate slightly from their migration route, but can continue on their migration pathway without any likely biologically significant impacts. Potential behavioural disturbance to pygmy blue whales within the distribution range only has the potential to occur during migratory periods, with the highest likelihood of impacts occurring doing the peak northbound (April to July (peak: May and June)) and southbound (October to January (peak: November) migratory seasons.

As demonstrated by the animat movement modelling, it is highly unlikely that PTS and TTS thresholds would be exceeded given the small onset PTS and TTS range, 10 and 30 m respectively, and furthermore it is highly unlikely given the known movement behaviour of pygmy blue whales, e.g. an individual whale would have to stay nearby the installation and drilling vessels for 24 hours. It is noted that the animat modelling is based on behaviours recorded during the southbound migration Therefore, it is not credible that PTS and TTS thresholds would be exceeded for pygmy blue whales transiting through the Operational Area in the northbound and southbound migration seasons as a result of installation and drilling activities.

To account for the potential presence of blue pygmy whales within the distribution range (and possibly west of the migratory BIA) in the peak northbound migratory season, adaptive management procedures will be implemented to manage potential impacts to pygmy blue whales (refer to ALARP table below) and to ensure the activity is not inconsistent with the BWCMP (Action Area 2 and 3 see Section 6.10).

Transponders used for positioning have the potential to cause some temporary behavioural disturbance to marine fauna; however, noise levels will be well below injury thresholds. Based on empirical spreading loss estimates measured by Warner and McCrodan (2011), received levels from USBL transponders are expected to exceed the cetacean behavioural response threshold for impulsive sources out to about 42 m. Given the short-duration chirps and the mid frequencies used by positioning equipment, the acoustic noise from a single transponder is unlikely to have any substantial effect on the behavioural patterns of marine fauna. Therefore, potential impacts from transponder noise are likely to be restricted to temporary and localised avoidance behaviour of individuals transiting through the PAA, and therefore are considered localised with no lasting effect.

Marine Reptiles

Five species of marine turtle may occur in the PAA: flatback, green, hawksbill, loggerhead and leatherback turtles. The PAA does not overlap internesting Habitat Critical to survival or internesting buffer BIAs (**Section 4.6.2**).

Species Sensitivity and Thresholds

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

Acute noise, or temporary exposure to loud noise, may result in the avoidance of important habitats and in some situations physical damage to marine turtles. McCauley et al. (2000) observed the behavioural response of caged sea turtles—green (Chelonia mydas) and loggerhead (Caretta caretta)—to an approaching seismic airgun. For received levels above 166 dB re 1 µPa (SPL), the turtles increased their swimming activity and above 175 dB re 1 µPa (SPL) they began to behave erratically, which was interpreted as an agitated state.

Sound exposure thresholds and criteria for continuous sound sources (e.g. vessel noise) and impulsive sources (e.g. transponders) applicable to marine turtles are summarised in **Table 6-8**.

Table 6-8: Thresholds for PTS, TTS and behavioural response onset in marine turtles for impulsive and continuous noise

Hearing group	Impulsive			Continuous		
	PTS onset thresholds: SEL_{24h} (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).

Results - Acoustic Modelling

As described in the acoustic modelling, based on the application of the multiple SEL24h thresholds (Finneran et al., 2017), PTS for turtles was not predicted to occur within the modelling resolution (20 m), and turtles could potentially experience TTS within 160 m (**Table 6-9**). However, marine turtles within the PAA are expected to be transient, and unlikely to remain with 160 m of the vessels for 24-hours, and therefore PTS and TTS thresholds are not expected to be reached. Behavioural impacts to marine turtles from continuous noise sources generated by the Petroleum Activities Program are expected to be short-term and localised.

Table 6-9: Maximum predicted horizontal distances (Rmax) to PTS and TTS thresholds in marine turtles

Hearing group	Sound exposure threshold	R_{max} distance (km)*
Marine turtles	***PTS***	
	220 dB re 1 µPa².s (SEL_{24h})	-
	TTS	
	200 dB re 1 µPa².s (SEL_{24h})	0.16

N.B. A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

Helicopter noise when on the sea surface may impact turtles (e.g. when basking or breathing). Typical startle responses occur at relatively short ranges (tens of metres) (Hazel et al., 2007) and as such, startle responses during typical helicopter flight profiles are considered to be remote. In the event of a behavioural response to the presence of a helicopter, turtles are expected to exhibit diving behaviour, which is of no lasting effect.

Potential impacts from routine acoustic emissions on marine turtles are expected to be limited to behavioural impacts within a localised area around the project vessels, with no lasting effect.

Impact Assessment

The Recovery Plan for Marine Turtles (Commonwealth of Australia, 2017) notes there is limited information available on the impact of noise on marine turtles and that the impact of noise on turtle stocks may vary depending on whether exposure is short (acute) or long-term (chronic). However, given the thresholds outlined in **Table 6-9**, it is reasonable to expect that marine turtles may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activities Program.

There are no marine turtle BIAs or Habitat Critical within 160 km of the PAA, and given the water depths and distance from shore, the PAA does not represent suitable foraging or internesting habitat. Marine turtle presence is expected to be infrequent, and potential impacts from predicted noise levels from the project vessels and transponders are not considered to be ecologically significant at a population level.

Fish, Sharks and Rays

A number of demersal and pelagic fish species will be present within the PAA. However, given species richness has been shown to correlate with habitat complexity (Gratwicke and Speight, 2005), it is unlikely that the sand/silt sediments that comprise the largest proportion of the PAA will support a wide diversity of species. Migratory species such as whale sharks may also be occasionally present within the PAA, although given the whale shark BIA is 165 km to the east, occurrence is likely to be rare.

Species Sensitivity and Thresholds

Fish perceive sound through the ears and the lateral line, which are sensitive to vibration. Some species of teleost or bony fish (e.g. herring) have a structure linking the gas-filled swim bladder and ear, and these species usually have increased hearing sensitivity. These species are considered to be more sensitive to anthropogenic underwater noise sources than species such as cod (Gadus sp.), which do not possess a structure linking the swim bladder and inner ear. Fish species that either do not have a swim bladder (e.g. elasmobranchs (sharks and rays) and scombrid fish (mackerel and tunas)) or have a much-reduced swim bladder (e.g. flat fish) tend to have a relatively low auditory sensitivity.

Considering these differences in fish physiology, Popper et al. (2014) developed sound exposure guidelines for fish; these are presented in **Table 6-10** and are considered appropriate to assess continuous acoustic discharges to fish from the Petroleum Activities Program.

Table 6-10: Impact thresholds to fish, sharks and rays for continuous noise

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

Note: The sound units provided in the table above include:

rms SPL: root mean square of time-series pressure level, useful for quantifying continuous noise sources.

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)

Source: Popper et al. (2014).

Impact Assessment

Sound produced by the vessels on DP has the potential to cause recoverable injury to some fish species with a swim bladder involved in hearing. However, this is not considered credible as fish would have to remain in very close proximity to the sound source, within 20 m, for 48-hours for this level of sound exposure to occur. Similarly, TTS effects could occur within 100 m of the vessels if the fish remained within this distance for 12-hours, however this is highly unlikely given the mobility of fish species and known behaviours that would reduce long exposure periods required to case TTS.

Potential impacts to demersal and pelagic fish and sharks/rays are expected to be limited to a behavioural response. Behavioural responses are expected to be short-lived, with duration of effect less than or equal to the duration of exposure. While fish may initially be startled and move away from the sound source, once the source moves on fish would be expected to move back into the area. Potential impacts from predicted noise levels from the project vessels and transponders are not considered to be ecologically significant at a population level.

Cumulative impacts

Cumulative impacts have been assessed above.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Ambient noise	Change in ambient noise	Low value (open water)	No lasting effect	Negligible (F)
Marine mammals	Change in fauna behaviour	High value species (i.e. pygmy blue whale)	No lasting effect	Slight (E)
Marine reptiles	Change in fauna behaviour	High value species (i.e. flatback, green, hawksbill or loggerhead turtles)	No lasting effect	Slight (E)
Fish	Change in fauna behaviour Hearing impairment to fauna	High value species	No lasting effect	Slight (E)
Overall Impact Significance Level: The overall impact significance level for routine acoustic emissions is Slight (E) based on no lasting effect to the high value receptors (marine mammals, reptiles and fish). The impact significance levels for individual receptors are consistent with the level in the OPP. Based on the assessment above, the implementation of controls and the absence of any TTS effects within the pygmy blue whale migration BIA, and no impact to the foraging BIA, the potential impacts of noise emissions from the activity on cetaceans are considered to be slight and short-term. Impacts to cetaceans are likely to be restricted to temporary behavioural changes (avoidance) in individuals moving through the Operational Area, with predicted noise not considered likely to cause injury effects. This is not inconsistent with the BWCMP (Section 6.9.3).				

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[11]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding).	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around cetaceans can potentially reduce the underwater noise footprint of a vessel and lower the likelihood of interaction above significant thresholds	Controls based on legislative requirements – must be adopted.	Yes C 3.1

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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.				
Good Practice				
Project vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.12	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks can potentially reduce the underwater noise footprint of a vessel	Legislative control for State waters, Whale Shark Interaction Protocol, being adopted for the Petroleum Activities Program.	Yes C 3.2
Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.[10]	F: Yes CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around turtles can potentially reduce the underwater noise footprint of a vessel	Benefits outweigh cost / sacrifice. Good Practice.	Yes **C 3.3**
Use trained vessel crew on project vessels (PV, LCV, HCV) to watch for cetaceans when vessels in the Operational Area and record presence / activity to the limit of visibility.	F: Yes CS: Time / cost associated with training and implementation.	Vessel crew trained in fauna observation and identification can increase sighting ability and accuracy, with sightings about to inform management actions if required, and contribute to understanding of cetacean presence in the area.	Benefits outweigh cost / sacrifice.	Yes **C 3.4**
Communicate known or probable sightings of Pygmy Blue Whales to	F: Yes	Sharing information on PBW presence	Benefits outweigh cost/sacrifice.	Yes **C 3.5**

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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
other Scarborough Project vessels in the area.	CS: Time / Cost associated with persons used for communications	and behaviour may assist in reducing risks associated with Scarborough Project vessels. By making crews aware of PBWs in the area, management actions can be effectively implemented.		
Use of adaptive management actions while operating during PBW migration season (April to July, and October to January). For any sightings of known or probable PBWs: • A dedicated watch[1] will be maintained by an MFO[2]; • If the vessel (PV, LCV, HCV) is in transit, will reduce speed to <6 knots; and • No new support vessels will enter the Operational Area; until the whale(s) is observed to move out of visible range from the project vessel (~3-5 km) or is not observed for a period of 30 mins	F: Yes CS: Time / cost in delay or interruption to activity execution,	Adjusting operations to limit increases in cumulative vessel noise and preventing sudden changes in movement may help reduce likelihood of underwater noise impacts to cetaceans, by providing adequate time and space for cetaceans to move away if disturbed by the noise.	Benefits outweigh cost/sacrifice.	Yes **C 3.6**
While operating during PBW migration seasons (April - July, October - January), the SIMOPs management plan (as per **C 8.6**) will consider the scheduling of and distances between Scarborough activities, to reduce the potential for injury to cetaceans.	F: Yes CS: Time / cost in delay or interruption to activity execution,	Consideration of project schedule to reduce concurrent activities within the PAA can help reduce likelihood of underwater noise impacts to cetaceans from cumulative noise.	Benefits outweigh cost / sacrifice.	Yes **C 3.7**
Use of aircraft to carry out visual observations for pygmy blue whale foraging activity (aerial survey).	F: Yes. Increases potential likelihood of environmental impacts, health and safety impacts to	Aerial surveys could assist in identifying pygmy blue whale foraging activity	Cost/sacrifice outweighs benefit. Due to distance of PAA from pygmy	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	personnel due to aircraft in the field. Unacceptable risk to personnel in operating aircraft so far offshore. CS: Significant cost of aircraft and personnel. Aircraft range limits observation time at WA-61-L requiring multiple aircraft/crew to cover daylight periods.	over a larger monitoring zone.	blue whale migration and foraging BIAs, presence of PBWs carrying out opportunistic foraging activities in the area is expected to be low.	
Professional Judgement – Eliminate				
Eliminate generation of noise from vessels or equipment.	F: No. The generation of noise from these sources cannot be eliminated due to operating requirements. Note that vessels operating on DP may be a safety critical requirement. CS: Inability to conduct the Petroleum Activities Program. Loss of project.	Not considered – control not feasible.	Not considered – control not feasible.	No
Stop DP operations if a PBW is sighted.	F: This may be possible for vessels transiting between activity locations, but when undertaking installation activities, the generation of noise from these sources cannot be eliminated due to operating requirements. Note that vessels operating on DP may be a safety critical requirement. CS: Time / Cost associated with interrupting construction activities.	Ceasing project vessel DP operations will reduce the potential for TTS effects to occur if a PBW stays within range of vessels for an extended period.	Grossly disproportionate. Implementation of the control requires considerable cost with minimal environmental benefit, given that PTS and TTS are not credible. Evidence suggests that the likelihood of encountering a migrating or foraging PBW within the Operational Area is considered low, and it is highly unlikely that PBW would spend sufficient time within range of vessel operations	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
			to encounter PTS or TTS. The cost/sacrifice outweigh the benefit gained.	
Professional Judgement – Substitute				
Management of vessel noise by varying the timing of the Petroleum Activities Program to avoid migration periods.	F: Yes. It is possible to vary the timing of the Petroleum Activities Program to avoid migration periods, however the risk of potential impacts from routine acoustic emissions is considered to be low, and limited to a behavioural response. CS: Significant cost and schedule impacts due to delays in securing vessels for specific timeframes. A variation in timing to avoid migration periods would result in significant delays to the project. Ideal (calm) sea states for subsea installation occur over the summer months.	Given the potential impacts to migrating fauna during this activity is low, implementation of this control would not result in a reduction in consequence.	Grossly disproportionate. Implementation of the control requires considerable cost with minimal environmental benefit. While activities may result in a behavioural disturbance to PBWs, this is likely to affect a small portion of individuals travelling outside of the Migration and Foraging BIAs and will not have a population level impact on the species. The cost/sacrifice outweigh the benefit gained.	No
Professional Judgement – Engineered Solution				
Reduce vessel speed in the Operational Area to reduce vessel noise propagation	F: Yes. CS: Increased vessel transit times, potential schedule delays and impact to subsequent activities	Operational Area does not overlap with any cetacean BIAs or critical habitat and the presence of marine fauna is likely to be limited to infrequent occurrences of individuals or small groups. Therefore, there is no further risk reduction from the application of this control.	Given the slow speeds at which vessels operate, the likely presence of marine fauna in the Operational Area and the controls currently in place the adoption of this control offers no further reduction in risk.	No
Passive Acoustic Monitoring (PAM)	F: No. PAM has limited ability to detect calls from	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***
	baleen whales such as the pygmy blue Whale, particularly with added background noise from vessel activities and known reliability and practicality limitations of the technology. CS: Costs associated with PAM technology acquisition and implementation.			
Use of thermal imaging equipment at night or periods of low visibility to identify cetacean presence.	F: Yes. Some technology may be feasible to install on support vessel, other technology such as hand-held thermal imaging binoculars are not feasible for use. CS: Costs associated with infrared technology acquisition and implementation.	Some thermal imaging equipment if effective, can increase likelihood of identifying cetacean presence - however limitations on detection distance/depth, interpretation of data (identification of cetacean type for example) and practicality exist. The open ocean sea states and conditions (i.e., high winds and rough seas) of the PAA may decrease the rate of marine mammal detection. This is in addition to the already low numbers, cryptic nature, and often solitary and distribution of PBW.	Cost/sacrifice outweighs benefit. Lack of proven application in detection of cetaceans in deep water environment and limitations of the technology reduce potential benefit gained when compared with low likelihood of expected cetacean activity and low likelihood of vessel movement at night.	No
Use of Autonomous Underwater Vehicle (AUV) to monitor for presence of pygmy blue whales using detection of their vocalisations.	F: Yes. Could be deployed from support vessel CS: Costs associated with obtaining and operating the technology. Schedule delays while data is	Limited benefit as the technology relies on pygmy blue whale vocalisation, which is currently not well understood, particularly during foraging activities. Technology and	Cost/sacrifice outweighs benefit. Due to distance of PAA from pygmy blue whale migration and foraging BIAs, presence of PBWs carrying out opportunistic	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	collected and interpreted (not real time monitoring)	applications still under development and not widely tested in field. Application limited due to lack of real time capability.	foraging activities in the area is expected to be low. It is not expected that an AUV would add significantly more value than opportunistic observations, to warrant deployment.	

ALARP Statement:

On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the potential impacts from noise emissions. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.4.3 of the Scarborough OPP (SA0006AF0000002, Rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:**

- Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to routine acoustic emissions have been adopted.
- Additional guidance on key terms within the CMP was issued in September 2021 and these were considered in the assessment against relevant actions in the CMP. The Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.
- There are no additional changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.

Acceptability Statement:

The impact assessment has determined that the generation of noise from project vessels and positioning equipment is unlikely to result in an impact significance level greater than slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. The pygmy blue whale (PBW) migration BIA is located about 35 km east of the PAA (**Section 4.6.3**). 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 (**Section 6.9**).The impact assessment has determined that the generation of noise from project vessels and positioning equipment will not result in a potential impact greater than localised and temporary impacts, with no lasting effect. Relevant recovery plans and conservation advice have been considered during the impact assessment. The Conservation Management Plan for the Blue Whale (Commonwealth of Australia, 2015a) Interim Recovery Objective is that 'Anthropogenic threats are demonstrably minimised' with the following Action Area A.2.3: "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". The associated Guidance on Key Terms within the Blue whale Conservation Management Plan (DAWE, 2021) provides further clarification that where it can be reasonably predicted that blue whale foraging is probable, known or whale presence is detected, adaptive management should be used during industry activities to prevent unacceptable impacts. While this Petroleum Activities Program occurs outside of any pygmy blue whale BIA, the impact assessment determined it is considered highly unlikely that individual PBW that may pass through the PAA during the PAP would experience PTS or TTS, given individuals would need to remain within 0.21 km (PTS) and 7.0 km (TTS) of the conservative worst-case credible vessel spread for a period of 24 hours. This is considered highly unlikely given the understanding of behaviour of pygmy blue whales (**Section 4.6.3**). The PTS and TTS ranges for individual activities are smaller (e.g. for the mooring pre-lay activity 0.19 km for PTS, 3.7 km for TTS), thereby further reducing the risk of injury to an individual pygmy blue whale, should the cumulative scenario(s) not eventuate. In addition, with the adoption of adaptive management controls (**C 3.6**) the activity will be

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
managed to reduce anthropogenic noise on pygmy blue whales and is therefore not inconsistent with The Conservation Management Plan for the Blue Whale (**Section 6.10**). The potential impacts are considered broadly acceptable if the adopted controls are implemented. Activities do not have a significant impact on MNES (**Section 2.4.2**) including those with an Indigenous connection with, or traditional use in nearshore areas as defined in **Section 4.9.1**) Therefore, Woodside considers the adopted controls appropriate to manage the impacts of acoustic emissions to a level that is broadly acceptable.				

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 5 Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. **EPO 6** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population. **EPO 7** Undertake the Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species.	**C 3.1** EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[13]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	**PS 3.1.1** Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) Interacting with cetaceans	**MC 3.1.1** Records demonstrate no breaches with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans.
		PS 3.1.2 All vessel strike incidents with cetaceans will be reported in the National Ship Strike Database (as outlined in the Conservation Management Plan for the Blue Whale – A Recovery Plan under the EPBC Act 1999, Commonwealth of Australia, 2015a).	**MC 3.1.2** Records demonstrate reporting cetacean ship strike incidents to the National Ship Strike Database.
	C 3.2 Vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach	**PS 3.2.1** When within 250 m of a whale shark vessels will not travel greater than 6 knots and vessels will	**MC 3.2.1** Records demonstrate no breaches of speed requirements when within 250 m of a whale shark

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

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	closer than 30 m of a whale shark.[14]	not approach closer than 30 m to a whale shark	
	C 3.3 Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.[12]	**PS 3.3.1** When within 300m of a turtle, vessels will not travel greater than 6 knots.	**MC 3.3.1** Records demonstrate no breaches of speed requirements when within 300m of a turtle
	C 3.4 Use trained vessel crew[15] on project vessels (PV, LCV, HCV) to watch for cetaceans when vessels in the Operational Area and record presence / activity to the limit of visibility.	**PS 3.4.1** Trained vessel crew[9] on PV, LCV and HCV observe and record cetacean presence/activity when vessels in the Operational Area.	**MC 3.4.1** Records of sightings and locations of cetaceans.
	C 3.5 Communicate known or probable sightings of PBWs to other Scarborough Project vessels in the area.	**PS 3.5.1** Sightings of known or probable PBWs communicated to other Scarborough Project vessels in the area.	**MC 3.5.1** Records of communications kept in bridge log.
	C 3.6 While operating during PBW migration season (April to July, and October to January) - for any sightings of known or probable PBWs (as per **C 3.4**): • A dedicated watch[16] will be maintained by an MFO[17]; • If the vessel (PV, LCV, HCV) is in	**PS 3.6.1** While operating during PBW migration season (April to July, and October to January), for any sightings of known or probable PBWs apply **C 3.6**.	**MC 3.6.1** Records show **C 3.6** implemented as required.

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

[15] Trained Vessel Crew - A suitably trained person who can make observations of fauna as part of their usual vessel activities (i.e. captain, first officer, bridge crew).

[16] Dedicated watch - A period of time during which the dedicated MFO actively and exclusively looks for cetaceans.

[17] MFO - A dedicated and suitably trained person (can be vessel crew) who must not have any other duties that impede their ability to engage in visual observations for marine fauna.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	transit, reduce speed to <6 knots; and • No new support vessels will enter the Operational Area; until the whale(s) is observed to move out of visible range from the project vessel (~3-5 km) or is not observed for a period of 30 mins.		
	C 3.7 While operating during PBW migration seasons (April - July, October - January), the SIMOPs management plan (as per **C 8.6**) will consider the scheduling of and distances between Scarborough activities, to reduce the potential for injury to cetaceans.	**PS 3.7.1** **C 3.7** applied during PBW migration seasons (April - July, October - January)	**MC 3.7.1** Records show **C 3.7** implemented as required.

6.7.4 Routine Light Emissions from Project Vessels

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.1 – Routine Light Emissions		
Context		
Relevant Activities Vessel Operations – **Section 3.7**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Protected Species – **Section 4.6**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	*Environmental Value Potentially Impacted*							*Evaluation*						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (inc. odour)	Ecosystems / Habitat	Species	Socio-economic	Decision Type	Impact/Consequence	Likelihood	Current Risk Rating	ALARP Tools	Acceptability	Outcome
Light emissions from project vessels						✓		A	E	-	-	GP	Broadly Acceptable	EPO 1, 5 ,6, 7, 8

Description of Source of Impact/Risk

Vessel Operations

Project vessels will have external lighting to support safe navigation and safe operations at night. 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 project vessels and cannot reasonably be eliminated. The vessels will be lit to maintain operational safety on a 24-hour basis.

The extent of this potential impact for the Petroleum Activities Program is restricted to the line of sight for each activity emitting light, which based on previous work undertaken by Woodside is about 30 km from vessels (Woodside, 2014).

The Petroleum Activities Program will not be executed as a single campaign or in a consecutive sequence, therefore light emissions may occur at any time during the period of the EP. Once the activities are completed, no permanent ongoing project lighting will occur in these locations.

While the line of sight may extend tens of kilometres from the source, the light density (measured in Lux – which represents the intensity of light that arrives at or leaves a surface, as perceived by the human eye) rapidly decreases as distance increases from the source of the light. Monitoring undertaken as a part of Woodside's 2014 study indicated that light density (from navigational lighting) attenuated to below 1.00 Lux and 0.03 Lux at distances of 300 m and 1.4 km, respectively, from the source (a MODU). Light densities of 1.00 and 0.03 Lux are comparable to natural light densities experienced during deep twilight and during a quarter moon. Navigational lighting from vessels is less than lighting on a MODU. Therefore, light emissions from vessels undertaking the Petroleum Activities Program are expected to be below 1.00 Lux within 300 m from the source.

Detailed Impact Assessment

Assessment of Potential Impacts

Ambient Light

The introduction of light emissions from activities associated with the Petroleum Activity Program can result in a temporary change to ambient light.

The area of operation is at a significant distance from coastal sources of light emissions. However, there are existing activities in the region which also generate light including offshore facilities and supporting activities, as well as shipping traffic.

The contribution of light emissions from the Petroleum Activities Program will be comparable with existing vessels and facilities on the North West Shelf and will not result in a notable increase.

Given the distance from shore, low sensitivity of receptors offshore (i.e. no presence of nesting turtles and low likelihood of hatchling turtles in the offshore environment), and the negligible contribution of light emissions to the environment from the Petroleum Activities Program, the habitat or ecosystem function or integrity of the marine area will not be impacted. Potential impacts of changes to ambient light are included in a number of recovery plans and conservation advice, including the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017) and the Wildlife Conservation for Migratory Shorebirds (DoE, 2015e).

The National Light Pollution Guidelines for Wildlife (NLPG) addresses potential impacts to marine turtles, seabirds and migratory shorebirds from artificial light (Commonwealth of Australia, 2020). The guidelines recommend a specific artificial light impact assessment process where there is important habitat for listed species that are known to be affected by artificial light within 20 km of a project. The 20 km threshold provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings demonstrated to occur at 15–18 km (Kamrowski, et al., 2014; Hodge et al., 2007) and fledgling seabirds grounded in response to artificial light 15 km away (Rodríguez et al., 2014). The PAA is about 226 km offshore and outside known BIAs for turtles and seabirds/migratory shorebirds, therefore a specific assessment of potential impacts of artificial lighting is not required under the NLPG.

Seabirds

High levels of marine lighting can attract and disorient seabird species resulting in species behavioural changes (e.g. circling light sources or disrupted foraging), injury or mortality near the light source (e.g. Longcore and Rich, 2004; Gaston et al., 2014; Rich and Longcore, 2006). As the PAA is offshore and away from islands or other emergent features, any presence of seabirds or shorebirds is considered likely to be of a transient nature only. The nearest BIA for birds within the EMBA is a breeding and foraging BIA for the wedge-tailed shearwater, located 127 km to the south-east of the PAA. Impacts to shearwaters within the BIA are therefore not expected.

Behavioural disturbance to birds from light is expected to be localised to within the vicinity of the vessels within the permit areas. The light source from the vessels within the PAA will be temporary and only when operations are occurring. Interactions with seabirds are therefore expected to be unlikely. Any impacts are predicted to be at an individual level and not a population level. The temporary behavioural disturbance of birds will be localised around the light sources, and not result in a substantial adverse effect on a population of species or its lifecycle. Additionally, light emissions will not seriously disrupt the lifecycle of an ecologically significant proportion of any migratory birds.

Based on the detailed evaluation, the magnitude of impacts to birds from light emissions during activities associated with the Petroleum Activities Program is expected to have no lasting effect.

Marine Reptiles

Exposure of marine turtles to artificial light can result in changes to their natural behaviour. Witherington and Martin (2003) state that light pollution on nesting beaches is detrimental to marine turtles because it alters critical nocturnal behaviours, namely, how turtles choose nesting sites, how they return to the sea after nesting, and how hatchlings find the sea after emerging from their nests. However, there are no sensitive marine turtle habitats near the PAA. The closest known turtle nesting beaches are at the North West Cape and Montebello Islands; the BIA located approximately 165 km from the PAA (flatback turtles). Marine turtles generally have a pelagic life stage as juveniles, before returning to nearshore coastal habitats as adults to forage and breed. At the PAA, marine turtles are unlikely to occur due to the deep waters (>900 m) however, they may occur offshore in small numbers. Leatherback turtles are an oceanic, pelagic species known to regularly forage within continental shelf waters. While leatherback turtles may occur in the PAA in small numbers, their distribution is widespread in Australia and their presence is unlikely. No turtles were observed during the winter or summer offshore marine surveys in the PAA (ERM, 2013).

While artificial lighting may be visible up to tens of kilometres away from the vessels, the light intensity will be low beyond several hundred metres from the light sources as described above. Although individuals undertaking behaviours such as migration or foraging (adults and pelagic juveniles) may occur within the PAA, marine turtles do not use light cues to guide these behaviours. Furthermore, there is no evidence, published or anecdotal, to suggest that foraging or migrating turtles are impacted by light from offshore vessels. As such, light emissions from the project vessels are unlikely to result in displacement of, or behavioural changes to individuals in these life stages

Due to the distance offshore, the density of any hatchlings is expected to be very low and limited to individuals. Lighting may temporarily alter their normal behaviour if attracted to the light spill from vessel operations. For any isolated individuals potentially attracted to light spill from project vessels, following sunrise, any effect of these light sources on hatchlings will be eliminated allowing dispersal behaviour to resume.

As described above, behavioural disturbance to turtles from light in the PAA is expected to be localised to within the vicinity of the vessels within the PAA. The light source from vessels within the PAA will be temporary and interaction with turtles is expected to be low. Therefore, any impacts are predicted to be at an individual level and not a population level. Impacts will not occur to significant proportions of the populations of the species, nor result in a decrease of the quality of the habitat such that the extent of these species is likely to decline.

Based on the detailed evaluation, the magnitude of impacts to marine turtles from light emissions during activities associated with the Petroleum Activities Program is evaluated to have no lasting effect.

Cumulative Impacts

Due to spatial and temporal separation, and relatively short duration of Petroleum Activities Program installation and survey activities (see **Table** 6-1), there is minimal opportunity for concurrent operations within the PAA that would result in cumulative light emissions. The location of concurrent activities in permit areas WA-61-L and WA-62-L and the existing environment with low presence of light sensitive receptors, means that cumulative impact from light on sensitive receptors, as a result of concurrent operations, is not considered credible.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Ambient Light	Change in ambient light	Low value (open water)	Slight	Negligible (F)
Seabirds and migratory shorebirds	Change in fauna behaviour	High value species (e.g. wedge-tailed shearwater)	No lasting effect	Slight (E)
Marine reptiles		High value species (e.g. flatback turtle)	No lasting effect	Slight (E)

Overall Impact Significance Level: The overall impact significance level for routine light emissions is E based on no lasting effect to the high value receptors (seabirds, migratory shorebirds and marine turtles). The impact significance levels for individual receptors are consistent with the level in the OPP.

Demonstration of ALARP

Control Considered	*Control Feasibility (F) and Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Control Adopted*
Legislation, Codes and Standards				
No additional controls identified.				
Good Practice				
Minimum lighting required for navigational, safety and operational 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 4.1**
Professional Judgement – Eliminate				
Substitute external lighting with ‘‘turtle friendly’’ light sources (reduced emissions in turtle visible spectrum).	F: Yes. Replacement of external lighting with turtle friendly lighting is technically feasible, although is not	Given the potential impacts to turtles during this activity is insignificant, implementation of this control would not result in	Grossly disproportionate. Implementation of the control requires considerable cost	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	considered to be practicable. CS: Significant cost sacrifice. The retrofitting of external lighting on the vessels, etc., would result in considerable cost and time expenditure. Considerable logistical effort to source sufficient inventory of the range of light types onboard the vessels.	a reduction in consequence.	sacrifice and provides minimal environmental benefit. The costs/sacrifices outweigh the benefit gained.	
Variation of the timing of the Petroleum Activities Program to avoid peak turtle internesting periods (December to January).	F: Yes. It is possible to avoid peak turtle hatchling emergence periods, through scheduling. CS: Significant cost and schedule impacts due to delays in securing vessels for specific timeframes.	Implementation of this control would not result in a reduction in consequence due to the distance of the PAA from turtle nesting beaches and the small area impacted by vessel light glow.	The cost/sacrifice outweighs benefit gained.	No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the potential impacts from routine light emissions from the vessels to be ALARP. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				
Demonstration of Acceptability				
Acceptability Criteria and Assessment				
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.1.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the EP acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to routine light emissions have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.				
Acceptability Statement: The impact assessment has determined that, given the adopted controls, routine light emissions from external lighting on the project vessels is unlikely to result in an impact significance level greater than slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts and the NLPG were taken into consideration during the impact evaluation. The Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice (**Section 6.9**).				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
The potential impacts are considered broadly acceptable if the adopted controls are implemented. Activities do not have a significant impact on MNES (**Section 2.4.2** including those with an Indigenous connection with, or traditional use in nearshore areas as defined in **Section 4.9.1**) Therefore, Woodside considers the adopted controls appropriate to manage the impacts of light emissions to a level that is broadly acceptable.				

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 1 Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results. **EPO 8** Undertake the Petroleum Activities Program in a manner that will not have a substantial adverse effect on a population of seabirds or shorebirds, or the spatial distribution of the population. **EPO 5** Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. **EPO 6** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population. **EPO 7** Undertake the Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species.	**C 4.1** Minimum lighting required for navigational, safety and operational requirements, with the exception of emergency events.	**EPS 4.1.1** Lighting will be limited to that required for safe work/navigation.	**MC 4.1.1** Inspection verifies no excessive light being used beyond that required for safe work/ navigation.

6.7.5 Routine Atmospheric and Greenhouse Gas Emissions

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.2 – Routine Atmospheric and Greenhouse Gas Emissions		
Context		
Relevant Activities Vessel Operations – **Section 3.7**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Protected Species – **Section 4.6**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Internal combustion engines and incinerators on vessels				✓				A	F	-	-	LC S GP PJ	Broadly Acceptable	EPO 9, 10

Description of Source of Impact

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

- Atmospheric pollutants (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 (SO2), 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 are those gasses within the atmosphere that absorb long-wave radiation, and thus trap heat reflected from the Earth's surface. The main gases responsible for this effect include carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Other greenhouse gases include perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF6).

Vessels are powered via the use of on-board generators (diesel-powered and/or LNG). Vessel operations require the use of marine diesel to undertake daily activities functions such as crane movements, desalination, sewage treatment, etc. Atmospheric emissions will be generated by the project vessels from internal combustion engines (including all equipment and generators) and incineration activities (including onboard incinerators).

The Petroleum Activities Program is estimated to be completed in 18 months and when underway, activities will be 24 hours per day, seven days per week. Vessels may mobilise from an Australian port or directly from international waters to the PAA.

Atmospheric emissions generated during the Petroleum Activities Program will include SOx, NOx, particulates and Volatile Organic Compounds (VOCs). SOx and particulate matter emissions are heavily influenced by the fuel used and its relative sulphur content, Marine Gas Oil (MGO) usually having a lower sulphite content than marine diesel oil or heavy fuel oil (HFO).

Greenhouse gases will be emitted from vessels involved in the activity consuming marine diesel fuel, and by helicopters transferring personnel. Using vessel fuel consumption rates estimated by contractors, internal helicopter

fuel consumption data and emission factors from the National Greenhouse and Energy Reporting Scheme (NGERS), GHG emissions have been estimated and are presented below:

- Vessel fuel combustion: 68,000 tCO_2e
- Helicopter fuel combustion: 2,000 tCO_2e

These figures are estimates only. The actual consumption of fuel varies based on factors such as the nature of activity being undertaken by vessels, metocean conditions etc. While Woodside may influence via contracting approaches, in-field day to day operations, and therefore fuel consumption, are under the control of vessel masters.

Based on the estimates provided above, the total GHG emissions over the course of the entire activity are estimated to be 70,000 tCO_{2e}. This is approximately 0.01% of the Scarborough project lifecycle GHG emissions as presented in the OPP, which were assessed as having a negligible impact significance level.

These figures are estimates only. The actual consumption of fuel varies based on factors such as the nature of activity being undertaken by vessels, metocean conditions etc. While Woodside may influence via contracting approaches, in-field day to day operations, and therefore fuel consumption, are under the control of vessel masters.

Detailed Impact Assessment

Assessment of Potential Impacts

Air Quality (atmospheric pollutants)

Atmospheric emissions may result in a decline in local air quality, within the immediate vicinity of the emissions source. As described above, produced emissions throughout the project will include SO_2, NOx, ozone depleting substances, CO_2, particulates and VOCs. Emissions from engines, generators and deck equipment may be toxic, odoriferous or aesthetically unpleasing, and will result in a reduction in air quality.

The air quality within the PAA is typical of an unpolluted tropical offshore environment and the ambient air quality in the offshore NWMR will be of high quality. Atmospheric emissions from the fuel combustion and incineration on project vessels (including generation of dark smoke) have the potential to result in a localised reduction in air quality in the immediate vicinity of the release point, with no lasting effect.

Given the offshore location of the PAA, and the low volumes of atmospheric emission which will be generated, biodiversity, ecological integrity, social amenities and human health will not be impacted and any potential impact to air quality is slight.

Marine Fauna

Atmospheric emissions can cause direct impacts to fauna, if they are present in the immediate vicinity of significant releases. Birds, for example, have been shown to suffer respiratory distress and illness when subjected to extended duration exposure to air pollutants (Sanderfoot and Holloway, 2017). Given that fauna numbers will be low at the point of discharge, injury or mortality to fauna as a result of atmospheric discharges is negligible.

A*esthetic Value*

Atmospheric emissions have the potential to introduce odour and visual amenity issues which can result in changes to the aesthetic value of an area.

Given the distance from shore of the PAA (216 km), the potential for a change in air quality from atmospheric emissions resulting in a change to aesthetic value for tourism/recreation or settlements is not considered to be credible. As the PAA is not directly visible from the nearest landfall, the potential smoke resulting from emissions will not impact visual amenity, and no impacts to visual amenity for settlements are expected. Therefore, a change in aesthetic value from atmospheric emissions associated with Petroleum Activities Program is negligible.

GHG Emissions

GHG emissions attributed to the vessels and helicopters contribute to global concentrations of GHG emissions. Cumulative increases in net global atmospheric GHG concentrations are considered to contribute to climate change. It is important to acknowledge that climate change impacts cannot be directly attributed to any one activity, as they are instead the result of global GHG, minus global GHG sinks, that have accumulated in the atmosphere since the industrial revolution.

The impact assessment of the potential impacts of climate change on sensitive receptors, within Australian jurisdictions is described in Section 7.1.3.8 of the Scarborough OPP (SA0006AF0000002, rev 5). More recent climate change reports have been published with updated projections of climate change, including the IPCC's Sixth Assessment Report (AR6) and the CSIRO and Bureau of Meteorology's State of the Climate 2020, which outlines the projected changes to Australia's climate. AR6 projects a slight increase in warming for similar emissions scenarios to AR5 (as presented in the Scarborough OPP), with a narrower range of uncertainty of these projections (higher confidence rates). The slight increase in warming is a result of a range of factors including the higher estimate of historical warming in AR6 and updated estimates of climate sensitivity (IPCC, 2021). The impact or risk evaluation described in Section 7.1.3.8 of the OPP does not change. Other construction, installation and decommissioning GHG emissions will be addressed in relevant EP for those activities.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Air quality	Change in air quality	Low value (open water)	Slight	Negligible (F)
	Climate Change	Low value	Slight	Negligible (F)

Overall Impact Significance Level: The overall impact significance level for routine atmospheric and GHG emissions is F based on a slight effect to air quality of the regional airshed and a low value receptor. The impact significance levels for individual receptors are consistent with the level in the OPP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 97 (Marine pollution prevention – Air pollution).	F: Yes. CS: Minimal cost. Standard practice	Legislative requirements to be followed may slightly reduce the likelihood of air pollution.	Control based on legislative requirements – must be adopted.	Yes **C 5.1**
Reporting of GHG emissions as required by regulatory requirements	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Emissions reporting can increase transparency and accountability	Control based on legislative requirements – must be adopted	Yes C 5.2
Good Practice				
Vessel operations planned such that fuel consumption and therefore subsequent emissions are minimised. Examples may include such aspects as vessel speeds, cleaning of biofouling, preventative maintenance on equipment such as thrusters, or turning off equipment when not in use.	F: Yes CS: Schedule delays	Managing use of project vessels can reduce fuel usage and subsequent GHG / air emissions	Potential benefit outweighs cost/sacrifice.	Yes C 5.3
Track and review GHG emissions during the Petroleum Activities Program with the objective to identify further opportunities to improve efficiencies if possible	F: Yes CS: Minimal cost. Good Practice	Development and implementation of processes to track emissions throughout Petroleum Activities Program execution facilitates interrogation of emissions data, enabling efficiencies to be identified more readily.	Potential benefit outweighs cost/sacrifice.	Yes C 5.4
Professional Judgement – Eliminate				
Do not combust fuel.	F: No. There are no vessels that do not use internal combustion engines. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement - Substitute				
Fuels types selected to reduce expected GHG emissions.	F: Yes CS: Monetary cost of fuel, logistics associated with fuel type supply (especially With regard to international vessels) and fuel inventory management for international vessels	Alternative fuel types such as Marine Gas Oil and Marine Diesel Oil (MGO & MDO) can reduce GHG emissions during use when compared to heavy or intermediate fuel oils (HFO or IFO)	Potential benefit outweighs cost/sacrifice.	Yes C 5.5

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	which may be required to change fuel type			
Professional Judgement – Engineered Solution				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls good oil-field practice, and appropriate to manage the impacts of fuel combustion and incineration. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				
Demonstration of Acceptability				
Acceptability Criteria and Assessment				
Demonstration of acceptability for the sources of the aspect and associated impacts assessed in this section are provided in Section 7.1.3.9 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to GHG emissions have been adopted. • There are no changes to internal/external context specific to this risk from the OPP however additional information related to climate change and energy emission outlooks has become available since the Scarborough OPP was accepted (February 2020). These have included: Woodside setting clear targets, to reduce net equity scope 1 and 2 emissions below the gross 2016-2020 annual average by 15% in 2025 and 30% in 2030 on a pathway to our aspiration of net zero by 2050[18]. These targets apply to emissions from the Scarborough Project. Woodside will apply offsets (carbon credits) where necessary to meet its obligations under these corporate targets. The GHG emissions that will be generated by the petroleum activity described in this environment plan are limited in magnitude and duration, and the activity will be completed prior to Australia's first target milestone and are therefore consistent with Australia's targets. The International Energy Agency (IEA) updated in its World Energy Outlook 2021. In the most ambitious scenario (“NZE”), which achieves net zero emissions by 2050 and limits the global rise in temperature to 1.5 °C, the IEA projects further investment in oil and gas supply is needed every year to 2030, above the actual 2020 level, and with yet more investment required in other scenarios. (Figure 6.18 and Table 6.1 of World Energy Outlook 2021). In the Paris-aligned Sustainable Development Scenario, natural gas consumption in Asia is projected to grow by over 36% between 2020 and 2030 and remains above 2020 levels through 2050 (Table A.12 of World Energy Outlook 2021). Noting that the NZE scenario aligns with Woodside’s aspiration to reach net zero by 2050. The GHG emissions that will be generated by the petroleum activity described in this environment plan are limited in magnitude and duration, and the activity will be completed prior to Australia's first target milestone and are therefore consistent with Australia's targets. Climate change was raised during consultation however feedback on climate change related more broadly to indirect emissions from gas production during Operations, which is not within the scope of this EP (See **Section 5.8** and **Section 6.6**).				
Acceptability Statement: The impact assessment has determined that, given the adopted controls, routine atmospheric emissions from fuel combustion and incineration are unlikely to result in an impact significance greater than negligible. The adopted controls are considered consistent with industry legislation, codes and standards, and professional judgement and meet the requirements of Australian Marine Orders.				

[18] For Woodside’s equity share of emissions from the facility (e.g. fuel use, flaring, production of natural occurring CO_2 from our petroleum reservoirs) and emissions associated with the generation of any power that we purchase.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
The potential impacts are considered broadly acceptable if the adopted controls are implemented. Activities do not have a significant impact on MNES (**Section 2.4.2**) including those with an Indigenous connection with, or traditional use in nearshore areas as defined in **Section 4.9.1**). Therefore, Woodside considers the adopted controls appropriate to manage the impacts of atmospheric emissions to a level that is broadly acceptable.				

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 9 Undertake the Petroleum Activities Program in a manner that will not result in a substantial change in air quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 10** Assess opportunities to improve energy efficiency and reduce GHG emissions from the Petroleum Activities Program.	**C 5.1** Marine Order 97 (Marine Pollution Prevention – Air Pollution) which detail requirements for: • International Air Pollution Prevention (IAPP) Certificate, required by vessel class • use of low sulphur fuel when available • Ship Energy Efficiency Management Plan (SEEMP), where required by vessel class • onboard incinerator complies with Marine Order 97.	**PS 5.1.1** Vessels compliant with Marine Order 97 (Marine Pollution Prevention – Air Pollution) to restrict emissions to those necessary to perform the activity. Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with vessel combustion certification/marine order requirements.	**MC 5.1.1** Marine Assurance inspection records demonstrate compliance with Marine Order 97.
	C 5.2 Reporting of GHG emissions as required by regulatory requirements	**PS 5.2.1** GHG emission regulatory reporting undertaken as required	**MC 5.2.1** GHG emissions records demonstrate reporting undertaken as per regulatory requirements
	C 5.3 Vessel operations will be planned such that fuel consumption is minimised where practicable. Examples may include such aspects as vessel speeds, cleaning of biofouling, preventative maintenance on equipment such as thrusters, or turning off equipment when not in use.	**PS 5.3.1** Vessel operations planned, where practicable, to minimise fuel consumption and associated GHG/air emissions	**MC 5.3.1** Plan/records show fuel use/emissions have been considered in vessel operations
		PS 5.3.2 Relevant vessel crew aware of requirement to consider GHG/air emissions in vessel operations.	**MC 5.3.2** Awareness training records include information on consideration of fuel use/GHG emissions for vessel operations.
	C 5.4 Track and review GHG emissions during the Petroleum Activities Program with the objective to identify further	**PS 5.4.1** GHG emissions tracking process developed which facilitates identification of further reduction opportunities during installation / Petroleum Activities Program execution	**MC 5.4.1** GHG emissions tracking process

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	opportunities to improve efficiencies if possible	to understand and influence emission sensitivities	
	C 5.5 Fuel types selected to reduce expected GHG emissions.	**PS 5.5.1** Project vessels will not use heavy fuel oil (HFO) or intermediate fuel oil (IFO)	**MC 5.5.1** Records show project vessels use alternative fuels to HFO / IFO

6.7.6 Routine and Non-Routine Discharges: Subsea Infrastructure Installation

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.12 - Routine and Non-Routine Discharges: Subsea Installation and Commissioning		
Context		
Relevant Activities Subsea Infrastructure Installation – **Section 3.10**	**Existing Environment** Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source oImpact/ Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Discharge of small volumes of preservation fluid during installation of pre-filled risers, jumpers and spool.		✓	✓		✓	✓		A	F	-	-		Broadly Acceptable	EPO 1, 11, 12, 13, 14, 15
FCG and leak testing of flowlines, production risers, gas export system and jumpers.		✓	✓		✓	✓		A	E	-	-			
Unpland contingent discharges i.e. wet buckle of flowline		✓	✓		✓	✓		A	E	-	-			

Description of Source of Impact/Risk
Installation Installation of the pre-filled risers, jumpers and spool may result in small volumes of preservation fluid being discharged to the environment. This will occur during activities such as cap removal and connector tie-in. Discharges will comprise of negligible volumes of filtered and treated water in risers and spool, and dyed MEG in jumpers. ***FCG and leak testing*** Following installation, various leak tests will be performed on the installed infrastructure. Flood, Clean, Gauging (FCG) will be conducted on the flowlines, replacing the air contents with treated seawater. Flexible risers and jumpers, pre-filled with treated freshwater, will be leak tested from the FLETs with an ROV based hydrotesting skid, and all subsea tie-ins will be visually inspected during the leak test hold period for leak detection. The gas export system will also be leak tested using an ROV based hydrotesting skid, by injecting treated freshwater into the RBM against closed valves on the PLET and high pressure (HP) caps on flexible risers. The concentration of injected hydrotest chemical (which typically contains corrosion inhibitor, oxygen scavenger, biocide and leak-detection dye) will be monitored to ensure levels average approximately 600 ppm for flowlines, risers, gas export system, and jumpers. A summary of the discharges associated with FCG and leak testing are in **Table 3-7** and **Table 3-8**. Discharges will comprise of filtered and treated water from the flowlines, risers and gas export system (volumes ranging from 5 m^3 to 31.4 m^3), and 60/40 MEG/water from the jumpers (~1 m^3). **Table 3-8** also includes contingency volumes of filtered and treated water from the flowlines, ranging from 272 m^3 to 373 m^3, in the event there is no clear indication of pigs' arrival. ***Unplanned contingency - wet buckle of flowlines*** The flowlines will be installed empty, therefore in the event of a wet buckle (**Section 3.11.1**), no immediate discharge will occur. As part of the flowline recovery process post-wet buckle, raw seawater ingress will be displaced by pigging with treated and filtered sea water, pumped using an ROV subsea skid via the associated FLET. The treated seawater would be discharged during FCG of the fully installed flowline, and replaced with new treated seawater for ongoing preservation. Depending on how far into the installation process the wet buckle occurs, the installation could be completed before FCG to replace raw seawater with treated seawater for preservation, or if the wet buckle occurs early in the process, the whole section may be removed and the process re-started, if appropriate. A conservative estimate of the treated seawater discharge volume is 1592/1673/2113 m^3 for each flowline, although this represents the full flowline volumes and the worst-case scenario.
Detailed Impact Assessment
Assessment of Potential Impacts
Due to the proposed chemical additives within the discharged fluids (i.e., biocides, corrosion inhibitors, oxygen scavenger, dyes), the discharges have the potential to impact sensitive receptors within the discharge area of influence, primarily through toxicological effects ranging from the inhibition of key biological processes (e.g., reproduction) to mortality. ***Water and Sediment Quality*** Background water quality in the NWMR is influenced by large tidal regimes and strong oceanographic currents. Water quality in the PAA is likely to be unpolluted tropical offshore environment, nutrient poor and reflects the offshore oceanic conditions of the wider Western Australian region. Similarly, marine sediments are typical of the continental slope in the Northwest Transition bioregion, consisting of soft sandy clay/silt (**Section 4.5**). The presence of chemical additives in discharged fluids are expected to degrade, decay, dilute and disperse once released through both dynamic mixing in the nearfield and by prevailing currents in the farfield, due to the open oceanic waters of the PAA. The discharges are expected to remain close to the seabed which means the temporary change in water quality will be restricted to deep waters. As such, the discharges are expected to result in a temporary decline in water quality around the discharge locations, with no lasting effect on water quality is predicted. As the discharge plumes are expected to remain close to the seabed, a temporary change in sediment quality may occur. However, due to rapid dispersion of the discharge fluids, the chemical additives will degrade and dilute rapidly following discharge with no predicted accumulation within seabed sediments and as such no lasting effect on sediment quality is predicted. ***Injury/mortality to Marine Fauna*** *Plankton* A change in water quality has the potential to result in the injury or mortality of planktonic species in the water column due to toxicity. Ichthyoplankton (eggs, larvae) are the most susceptible organisms to chemical exposure, as they have limited mobility and thus likely to be exposed to discharge plumes if present. These organisms however, have a high natural mortality and rapid replacement rate and are therefore likely to recover after activity ceases.

Discharges from installed infrastructure will occur close to the seafloor in water depths of approximately 900–1000 m. Given phytoplankton and zooplankton are generally limited to near-surface waters (i.e., the photic and meso-photic zones) no lasting effect on plankton is expected.

Epifauna and infauna

As a result of a change in sediment or water quality, impacts to benthic habitat receptors may occur. This may include sub-lethal effects or mortality to benthic epifauna and infauna resulting from the increased (water) or accumulation of (sediment) potential contaminants and toxins. Epifauna and infauna sensitivity to discharged fluids is expected to be similar to pelagic invertebrate species such as plankton. Benthic infauna and epifauna communities in the PAA are primarily soft sediment communities featuring burrowing organisms. No primary producer communities (hard corals, seagrass, macroalgae) are present due to the lack of light.

There is potential for a localised area of epifauna to be exposed to lethal and sub-lethal concentrations in the immediate vicinity of release locations. However, due to rapid dispersion of the discharged fluids, uptake and bioaccumulation of contaminants is not expected to occur in sediments or benthic organisms beyond the point of release. The extent of seabed exposure at levels where impacts could occur will be very small, and potential impacts are expected to be localised, temporary and negligible. Impacts from discharged fluids will have no lasting effect on epifauna and infauna. There are no variations in seasonal sensitivity in relation to epifauna and infauna that would influence the effect of the discharges.

Marine Fauna

The PAA does not overlap any BIAs for protected marine fauna and given the water depth (approximately 900–1000 m) and temporary nature of the discharges, impacts to protected species are not expected. The deep water and predominantly featureless, flat soft sediment seabed in the PAA is of low complexity and low productivity (see **Section 4.5**) and reduces the species diversity and richness of pelagic and demersal fish assemblages. Potential impacts to pelagic or demersal fish species from discharged fluids are expected to be confined to the vicinity of discharge point. Fish are likely to be transient within the receiving environment adjacent to the discharge location, and as such are unlikely to be exposed to sufficient concentrations or durations of the discharge constituents to elicit a response. Furthermore, fish and other marine fauna have the capacity to adapt their behaviour in response to changes in environmental conditions and can be expected to move away from the discharge if exposed. Given the low likelihood of pelagic species being exposed to the discharge; and the ability of fish to move away from the discharge plume, the potential for toxic impacts to occur from the temporary and small volumes of discharged fluids are considered to be localised, short-term and no lasting effect at the population or bioregional scale.

KEFs

The PAA is located within the Exmouth Plateau KEF. The Exmouth Plateau is defined as a KEF as it is a unique seafloor feature with ecological properties of regional significance, which apply to both the benthic and pelagic habitats within the feature. Therefore, as a result of a change in sediment quality and/or water quality, potential impacts to this KEF may occur. Values of the Exmouth Plateau with the potential to be affected by discharged fluids is limited to impacts to benthic environments containing low habitat heterogeneity within the plume. There is no solids component in the discharge, and therefore no smothering or alteration of the seabed is expected to occur.

The seafloor composition within the area of discharge is expected to primarily be mud and clay material. Survey of the plume area identified the seafloor to contain sparse marine life dominated by motile taxa typical of deep-water soft substrates (ERM, 2013; DEWHA, 2008a). Impacts from the temporary and small volumes of discharged fluids will have no lasting effect on KEFs.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level / Risk Consequence
Water quality	Change in water quality	Low value (open water)	Slight	Negligible (F)
Sediment quality	Change in sediment quality	Low value (open water)	Slight	Negligible (F)
Plankton	Injury / mortality to fauna	Low value (open water)	No Lasting Effect	Negligible (F)
Epifauna and Infauna	Injury / mortality to fauna	Low value (open water)	No Lasting Effect	Negligible (F)
Fish		High value species	No lasting effect	Slight (E)
Marine Mammals		High value species	No lasting effect	Slight (E)

Marine Reptiles	Injury / mortality or behavioural changes to marine fauna	High value species	No lasting effect	Slight (E)
KEFs	Change in habitat	High value habitat	No lasting effect	Slight (E)
Overall Impact Significance Level: The overall impact significance level for routine and non-routine discharges from subsea infrastructure installation activities is slight (E) based on slight effect to high value receptors (marine fauna). The impact significance level for water quality is consistent with the level rated in the Scarborough OPP. Potential impacts to marine fauna have been additionally assessed in this EP. There is no change in magnitude of impact (no lasting effect).				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
No additional controls identified				
Good Practice				
Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints as identified in **Section 7.2.1**.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals in discharges will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 6.1**
Pre-commissioning procedures developed and followed including • The volumes and concentrations of all inhibitor chemicals injected will be monitored and total chemical use will be measured.	F: Yes CS: Minimal cost, standard practice	Monitoring of chemical concentrations and volumes during pre-commissioning will reduce the likelihood of prolonged undetected leaks and reduce the likelihood of over supply subsequently reducing associated toxicological effects	Benefits outweigh cost/sacrifice	Yes C 6.2

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
		in the receiving environment.		
A flowline installation procedure will be in use which includes: • Alarm systems for dynamic positioning to indicate loss of vessel position. • Lay system outputs monitored and adjusted to ensure flowline catenary is maintained. • Flowline touch down position via ROV monitoring.	F: Yes. CS: Minimal cost. Standard practice.	Flowline installation procedures will reduce the likelihood of a wet buckle occurring that would require contingency dewatering.	Benefits outweigh cost/sacrifice.	Yes C 6.3
Professional Judgement - Eliminate				
No subsea discharges to be released to the marine environment	F: Not feasible. FCG and leak testing is required to ensure verification of structural integrity is achieved. CS: Not considered, control not feasible.	Not considered – control not feasible.	Not considered – control not feasible	No
Professional Judgement – Substitute				
No additional controls identified				
Professional Judgement – Engineered Solutions				
No additional controls identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the impacts of discharged fluids from the installation of subsea infrastructure. 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 Criteria and Assessment				
The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance level for water quality is consistent with the level rated in the Scarborough OPP. As discussed above, potential impacts to marine fauna have been additionally assessed in this EP. There is no change in magnitude of impact (no lasting effect); however, the impact significance level is slightly higher due to the higher receptor sensitivity level. This is not considered a significant change to the overall environmental impact and risk assessed in the Scarborough OPP. • EPOs and controls in the Scarborough OPP that are relevant to routine and non-routine discharges have been adopted. • There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.				
Acceptability Statement:				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
The impact assessment has determined that, given the adopted controls, discharges from the installation of subsea infrastructure are unlikely to result in an impact significance level greater than Slight. The adopted controls are considered consistent with industry legislation, codes and standards, and professional judgement and meet the requirements of Australian Marine Orders. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Activities do not have a significant impact on MNES (**Section 2.4.2**) including those with an Indigenous connection with, or traditional use in nearshore areas as defined in **Section 4.9.1**). Therefore, Woodside considers the adopted controls appropriate to manage the impacts of these discharges to a level that is broadly acceptable.				

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 11 Undertake the Petroleum Activities Program in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 1** Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results. **EPO 12** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution. **EPO 13** Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity an area defined as a KEF. **EPO 14** Undertake Petroleum Activities Program in a manner that prevents substantial change in sediment quality, which may adversely impact biodiversity,	**C 6.1** Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.	**PS 6.1.1** Reduces to ALARP the impact potential of all chemicals intended or likely to be discharged into the marine environment.	**MC 6.1.1** Records demonstrate chemical selection, assessment and approval process for selected chemicals is followed.
	C 6.2 Pre-commissioning procedures developed and followed including • The volumes and concentrations of all inhibitor chemicals injected will be monitored and total chemical use will be measured.	**PS 6.2.1** Monitoring of chemicals injected confirms average concentrations of approximately 600 ppm for flowlines, risers gas export system, and jumpers.	**MC 6.2.1** Records of inhibitor chemicals injected and total chemical use.
	C 6.3 A flowline installation procedure will be in use which includes: • Alarm systems for dynamic positioning to indicate loss of vessel position. • Lay system outputs monitored and adjusted to ensure flowline catenary is maintained. • Flowline touch down position via ROV monitoring.	**PS 6.3.1** Flowline installation procedure is in use during pipelay activities.	**MC 6.3.1** Records of flowline installation procedure

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
ecological integrity, social amenity or human. **EPO 15** Undertake Petroleum Activities Program in a manner that prevents significant impacts on the values of the Exmouth Plateau KEF.			

6.7.7 Routine and Non-Routine Discharges: Project Vessels and Installation

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.7–7.1.10 – Routine and Non-Routine Discharges		
Context		
Relevant Activities Vessel Operations – **Section 3.7** Cement / grout from seabed installation activities – **Section 3.11.4**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	Environmental Value Potentially Impacted							*Evaluation*						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (inc. odour)	Ecosystems / Habitat	Species	Socio-economic	Decision Type	Impact/Consequence	Likelihood	Current Risk Rating	ALARP Tools	Acceptability	Outcome
Routine discharge of sewage, grey water and putrescible wastes to marine environment			✓			✓		A	E	-	-	LCS GP PJ	Broadly Acceptable	EPO 11, 12
Routine **discharge** of deck and bilge water to marine environment			✓			✓		A	E	-	-			
Routine discharge of **brine** or cooling water to the marine environment			✓			✓		A	F	-	-			
Cement and grout from **seabed** intervention activities		✓	✓			✓		A	E	-	-			

Description of Source of Impact/Risk

Accommodation is provided for approximately 220 people on vessels, based on manning for PV and LCV.

Project vessels routinely generate/discharge:

- Sewage and Greywater: Small volumes of treated sewage, putrescible wastes and grey water will be routinely generated/discharged to the marine environment (impact assessment based on approximate discharge of 5-15 m^3 per vessel per day). Using a rate of 0.375 m^3/person/day as a guide (NERA, 2017), it is expected that vessel discharges will range from ~83 m^3/day from the largest vessel (~220 people onboard) to ~9.5 m^3/day from a support vessel.
- Food waste: Vessel crew and passengers will generate food waste, estimated to be in the order of 1–2 kg per person per day, which will be discharged to the marine environment under controlled conditions.
- Deck and Bilge Water: Routine/periodic discharge of relatively small volumes of bilge water will occur from vessels. Bilge tanks receive fluids from many parts of the vessels. Bilge water can contain water, oil, detergents, solvents, chemicals, particles and other liquids, solids or chemicals. There is also variable water discharge from

vessel decks directly overboard or via deck drainage systems. Potential sources include rainfall events and/or deck activities such as cleaning/wash-down of equipment/decks.

- Brine and Cooling Water: Cooling water from machinery engines and brine water produced during the desalination process of reverse osmosis to produce potable water on board the vessels will be routinely discharged. Depending on vessel, seawater used for cooling purposes will be routinely discharged at a temperature expected to be less than 70 °C and rates of approximately 50 m^3/d.
- Cement and Grout: During span rectification works, cement discharges may occur from overflow whilst filling/filtering of cement through cement bags for span rectification, line washout (down line cleaning); or cement until washout from on board vessel.

Project vessels are predominantly transient through the PAA whilst discharging, with the greatest risk associated with vessels with low transit speed during activities. The Petroleum Activities Program may not be executed as a single campaign or in a consecutive sequence, therefore the routine and non-routine vessel discharges may occur at any time during the approval period of the EP.

Detailed Impact Assessment

Assessment of Potential Impacts

Water Quality

Monitoring of vessel sewage discharges has demonstrated that a 10 m^3 sewage discharge over 24 hours from a stationary source in shallow water, reduced to about 1% of its original concentration within 50 m of the discharge location (Woodside, 2008). Monitoring stations confirmed that discharges were rapidly diluted or nutrients rapidly metabolised and no elevations in water quality parameters (e.g. total nitrogen, total phosphorous and selected metals) were recorded above background levels at any station.

Discharge of food waste has the potential to change the local water quality for a short period through the addition of a temporary nutrient source, however this nutrient loading would rapidly return to background conditions following dispersion in the water.

Deck drainage and treated bilge water may contain a range of chemicals, oil, grease and solid material; however these discharges are expected to rapidly dilute in the water column (Shell, 2010). In addition, vessels are typically moving during discharges of treated bilge water, which promotes mixing and dilution.

The key physicochemical stressors that are associated with reject brine and cooling water discharge include salinity, pH, temperature and chemical toxicity. Water quality of the surrounding environment may be altered through the addition of chemicals and an increase in salinity. Scale inhibitors and biocides are commonly used within the systems described above to prevent fouling. Scale inhibitors are typically low molecular weight phosphorous compounds that are water-soluble, and only have acute toxicity to marine organisms about 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).

The potential impacts on water quality due to cooling water discharge include chlorine toxicity and increased water temperatures. Discharges will disperse and dilute rapidly, with impacts to water quality localised to the discharge point.

Reject brine water is typically 20–50% higher in salinity to the surrounding water and based on models developed by the US EPA (Frick et al., 2001), discharges of brine water will sink through the water column where it will be rapidly mixed with receiving waters and dispersed by ocean currents, decreasing in salinity rapidly as distance from source increases.

Generally, reject brine and cooling water containing chemical additives are inherently safe at the low dosages used. They are usually consumed in the inhibition process, so there is little or no residual chemical concentration remaining upon discharge.

Cement discharges may occur, from overflow, and can result in an increase in turbidity in the water column. Reduction in water quality will be temporary (limited to the cement operation discharges) and due to small volumes, are likely to rapidly disperse and dilute in prevailing currents.

Impacts from routine and non-routine discharges from vessels on water quality will have no lasting effect due to the transient nature of vessels, with little continuous discharge in a stationary location. Furthermore, routine and non-routine vessel discharges occur in a localised mixing zone, with a high level of dilution into the open water marine environment of the PAA.

Marine Sediment

Cement discharges at the seabed are likely to be minimal and once cement has hardened, chemical additives are locked into the cement (Terrens et al., 1998) and are not expected to pose any toxicological risk to benthic biota from leaching or direct contact. The physical sediment properties of the area directly adjacent to the discharge location will be permanently altered however it will be highly localised physical footprint and is not expected to affect the overall diversity or ecosystem function of the benthic communities in the area.

The potential impacts to benthic communities caused by smothering from a surface release of cement are expected to be minimal due to small volumes, intermittent nature of these discharges, and high potential for dispersal by ocean currents. This impact on soft sediment communities is not expected to affect the diversity or ecosystem function in the area, and is considered to be a localised impact.

Marine Fauna

It is possible that marine fauna transiting the localised area may come into contact with these discharges (e.g. marine turtles, humpback whales, whale sharks; **Section 4.6**) as they traverse the PAA. However, given the localised extent of cumulative impacts from multiple vessel discharges and limited exposure within the PAA, significant impacts to marine fauna are not expected. No BIA's for marine fauna overlap the PAA

Plankton

Routine and non-routine discharges may affect the ecophysiology of marine organisms as a result in changes of salinity. Studies indicate that effects from increased salinity on planktonic communities in areas of high mixing and dispersion are generally limited to the point of discharge only (Azis et al., 2003). Research has demonstrated that zooplankton are not affected in areas of sewerage or greywater discharge for transient vessels (Mearns et al., 2003; Ytreberg et al., 2020). Plankton communities are expected to rapidly recover from short term, localised impacts due to their naturally high mortality, and rapid replacement rates (UNEP, 1985).

Planktonic productivity in the NWMR is low. No significant impacts from the planned routine discharges are expected, 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. Impacts to plankton from grey water, sewerage or brine and cooling water discharges is not expected.

Cumulative Impacts

The impacts from routine and non-routine discharges from vessels on water quality will have no lasting effect, due to the transient nature of vessels, with little continuous discharge in adjacent stationary locations. Furthermore, routine and non-routine vessel discharges occur in a localised mixing zone, with a high level of dilution into the open water marine environment of the PAA. As such, cumulative impacts from vessel discharges are not considered credible.

Summary of Assessment Outcomes

Receptor	***Impact***	***Receptor Sensitivity Level***	***Magnitude***	***Impact Significance Level***
Water Quality	Change in water quality	Low value (open water)	No Lasting Effect	Negligible (F)
Sediment quality	Change in sediment quality	Low value	No Lasting Effect	Negligible (F)
Migratory Shorebirds and Seabirds	Injury or behavioural changes to marine fauna	High value species	No Lasting Effect	Slight (E)
Fish		High value species	No Lasting Effect	Slight (E)
Marine Mammals		High value species	No Lasting Effect	Slight (E)
Marine Reptiles		High value species	No Lasting Effect	Slight (E)
Plankton		Low value (open water)	No Lasting Effect	Negligible (F)

Overall Impact Significance Level: The overall impact significance level for routine and non-routine discharges from vessels is E based on no lasting effect to marine fauna. The impact significance level for water quality is consistent with the level rated in the Scarborough OPP. Potential impacts to marine fauna have been additionally assessed in this EP. There is no change in magnitude of impact (no lasting effect); however, the impact significance level is slightly higher due to the higher receptor sensitivity level.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 95 – Pollution prevention – garbage (as appropriate to vessel class) which requires putrescible waste and food scraps are passed through a macerator so that it is capable of passing through a screen with no opening wider than 25 mm.	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 7.1**
Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class) which include the following requirements: • a sewage treatment plant approved by an issuing body that complies with Regulation 9 of Annex IV (of MARPOL) and other guidelines as required; or • a sewage comminuting and disinfecting system approved by an issuing body, that complies with Regulation 9 of Annex IV; or • a holding tank approved by an issuing body, that complies with Regulation 9 of Annex IV.	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes C 7.2
Marine Order 91 – Oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge: • Oil Record Book Valid International Oil Pollution Prevention (IOPP) Certificate.	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes C 7.3

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• Vessel specific SOPEP.				
Good Practice				
Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals in discharges will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes C 7.4
Professional Judgement – Eliminate				
No additional controls identified.				
Professional Judgement – Substitute				
Storage, transport and treatment/disposal onshore of routine discharges.	F: Not feasible. Would present additional safety and hygiene hazards resulting from the storage, loading and transport of the waste material. Distance of activity offshore also makes the implementation of this control not feasible. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the impacts of planned routine and non-routine discharges from 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 Criteria and Assessment				
The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**):				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• Overall impact significance level for water quality is consistent with the level rated in the Scarborough OPP. As discussed above, potential impacts to marine fauna have been additionally assessed in this EP. There is no change in magnitude of impact (no lasting effect); however, the impact significance level is slightly higher due to the higher receptor sensitivity level. This is not considered a significant change to the overall environmental impact and risk assessed in the Scarborough OPP. • EPOs and controls in the Scarborough OPP that are relevant to routine discharges have been adopted. • There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.				
Acceptability Statement: The impact assessment has determined that, given the adopted controls, routine and non-routine discharges vessels are unlikely to result in an impact significance level greater than negligible. No BIAs for EPBC Act listed Threatened or Migratory species overlap the PAA (refer to **Section 4.6**). The adopted controls are considered consistent with industry legislation, codes and standards, and professional judgement and meet the requirements of Australian Marine Orders. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Activities do not have a significant impact on MNES (**Section 2.4.2**) including those with an Indigenous connection with, or traditional use in nearshore areas as defined in **Section 4.9.1**). Therefore, Woodside considers the adopted controls appropriate to manage the impacts of these discharges to a level that is broadly acceptable.				

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 11 Undertake the Petroleum Activities Program in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 12** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution.	**C 7.1** Marine Order 95 – Pollution prevention – garbage (as appropriate to vessel class) which requires putrescible waste and food scraps are passed through a macerator so that it is capable of passing through a screen with no opening wider than 25 mm.	**PS 7.1.1** Vessels compliant with Marine Order 95 – Pollution prevention – garbage.	**MC 7.1.1** Records demonstrate vessels are compliant with Marine Order 95 – Pollution prevention (as appropriate to vessel class).
	C 7.2 Marine Order 96 - pollution prevention – sewage (as appropriate to vessel class) which include the following requirements: • a sewage treatment plant approved by an issuing body that complies with Regulation 9 of Annex IV (of MARPOL) and other guidelines as required; or • a sewage comminuting and disinfecting system approved by an issuing body, that complies with	**PS 7.2.1** Vessels compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).	**MC 7.2.1** Records demonstrate vessels are compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	Regulation 9 of Annex IV; or • a holding tank approved by an issuing body, that complies with Regulation 9 of Annex IV.		
	C 7.3 Marine Order 91 – oil (as relevant to vessel class) requirements, which includes mandatory measures for the processing of oily water prior to discharge: • Oil Record Book Valid International Oil Pollution Prevention (IOPP) Certificate. • Vessel specific SOPEP.	**PS 7.3.1** Discharge of machinery space bilge/oily water will meet oil content standard of <15 ppm without dilution.	**MC 7.3.1** Records demonstrate discharge specification met for vessels.
	C 7.4 Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process as described in **Section 7.2.1**.	**PS 7.4.1** Chemicals intended or likely to be discharged into the marine environment will be approved through the Woodside chemical assessment process.	**MC 7.4.1** Records demonstrate chemical selection, assessment and approval process for selected chemicals is followed.

6.8 Unplanned Activities (Accidents, Incidents, Emergency Situations)

6.8.1 Quantitative Spill Risk Assessment Methodology

6.8.1.1 Quantitative Hydrocarbon Spill Modelling

Quantitative hydrocarbon spill modelling was performed by RPS, on behalf of Woodside, using a three-dimensional hydrocarbon spill trajectory and weathering model, SIMAP (Spill Impact Mapping and Analysis Program). The model is designed to simulate the transport, spreading and weathering of specific hydrocarbon types under different environmental conditions (both meteorological and oceanographic). Near-field subsurface discharge modelling was performed using OILMAP, which predicts the droplet sizes that are generated by the turbulence of the discharge as well as the centreline velocity, buoyancy, width and trapping depth (if any) of the rising gas and oil plumes. The OILMAP output parameters were used as input into SIMAP.

The algorithms in the SIMAP model are based on the best available scientific knowledge and are updated when necessary in response to significant advances in knowledge. Recent improvements have been implemented to the entrainment algorithm, which have been adjusted to implement the findings of published data based on field research performed during the Macondo spill event in the Gulf of Mexico (Spaulding et al., 2017; Li et al., 2017; French McCay et al., 2018).

Stochastic modelling was conducted for this study, which compiled data from 100 hypothetical spills under different environmental conditions to determine the widest extent of possible oil dispersion. The environmental conditions for each of the hypothetical spills were selected randomly from an historic time-series of wind and current data representative of the study area. Results of the replicate simulations were then statistically analysed and mapped to define contours of percentage probability of contact at identified thresholds around the hydrocarbon release point. The simulations that show something unusual or unexpected make an important contribution to the overall outcomes and fate of the hydrocarbon.

The model simulates surface releases and uses the unique physical and chemical properties of a representative hydrocarbon type to calculate rates of evaporation and viscosity change, including the tendency to form oil-in-water emulsions. Moreover, the unique transport and dispersion of surface slicks and in-water components (entrained and dissolved) are modelled separately. Thus, the model can be used to understand the wider potential consequences of a spill, including direct contact of hydrocarbons due to surface slicks (floating hydrocarbon) and exposure of organisms to entrained and dissolved aromatic hydrocarbons in the water column. The model also calculates the accumulation of hydrocarbon mass that arrives on each section of shoreline over time, taking into account any mass that is lost to evaporation and/or subsequent removal by current and wind forces.

All hydrocarbons spill modelling assessments performed by RPS undergo initial sensitivity modelling to determine appropriate time to add to the simulation after the cessation of the spill. The amount of time following the spill is based on the time required for the modelled concentrations to practically drop below threshold concentrations anywhere in the model domain in the test cases.

6.8.1.2 Worst-case Scenario

In assessing the potential impacts of an unplanned hydrocarbon release, representative worst-case scenarios (in terms of volume and location) were assessed. A summary of the credible hydrocarbon spill scenarios that could occur during the Scarborough Petroleum Activities Program are provided in **Table 6-11**.

Table 6-11: Credible hydrocarbon spill scenarios

Scenario	Hydrocarbon type	Maximum credible volume	Location
Vessel collision resulting in rupture of a tank	MDO	1000 m³	Within PAA
Loss of containment during bunkering	MDO	50 m³	Within PAA

For the Petroleum Activities Program, the worst-case scenario was identified to be an instantaneous surface release of 1000 m³ of MDO, representing loss of vessel fuel tank integrity following a collision. As the worst-case scenario, the following assessment of impacts will also address the potential impacts of other credible lesser releases.

6.8.1.3 Environment that May Be Affected and Hydrocarbon Contact Thresholds

The outputs of the quantitative hydrocarbon spill modelling are used to assess the environmental risk, if a credible hydrocarbon spill scenario occurred, by delineating which areas of the marine environment could be exposed to hydrocarbon levels exceeding hydrocarbon threshold concentrations (outlined in **Table 6-12**). The summary of all the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the 'environment that may be affected' (EMBA), which has been conservatively assessed based on the loss of 2000 m^3 in the event of a vessel collision resulting in a fuel tank rupture.

As the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, the EMBA combines the potential spatial extent of the different fates. Note, no shoreline accumulation of hydrocarbons above threshold concentrations resulted from the modelled worst-case credible spill.

The EMBA covers a larger area than the area that is likely to be affected during any single spill event, as the model was run for a variety of weather and metocean conditions. The EMBA therefore represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from all modelling runs. Given the EMBA comprises the results of many individual simulations, the total area covered at the thresholds has been smoothed to create a continuous boundary for the purpose of describing the environment within it (**Figure 4-1**).

Surface and accumulated shoreline hydrocarbon concentrations are expressed as grams per square metre (g/m²), with entrained and dissolved aromatic hydrocarbon concentrations expressed as parts per billion (ppb). A conservative approach adopting accepted contact thresholds that are documented to impact the marine environment are used to define the EMBA. These hydrocarbon thresholds are presented in **Table 6-12** and described in the following subsections.

Woodside recognises that hydrocarbons may be present beyond the ecological impact EMBA at low concentrations that may be visible but are not expected to cause ecological impacts. The threshold for visible surface oil (1 g/m^2) has therefore been used to define an additional boundary within which socio-cultural impacts to the visual amenity of the marine environment may occur. This area is referred to as the socio-cultural EMBA. Any ecological impacts from dissolved and entrained hydrocarbons above prescribed thresholds, as in **Table 6-12**, may also result in socio-cultural impacts. Potential impacts to socio-cultural values assessed within these EMBAs include:

- protected areas
- national and Commonwealth Heritage Listed places
- tourism and recreation
- fisheries.

Table 6-12: Summary of environmental impact thresholds applied to the quantitative hydrocarbon spill risk modelling results

Hydrocarbon Type	EMBA				Socio-cultural EMBA	Scientific Monitoring Plan EMBA
	Surface hydrocarbon (g/m^2)	***Dissolved hydrocarbon (ppb)***	***Entrained hydrocarbon (ppb)***	***Accumulated hydrocarbon (g/m2)***	***Surface hydrocarbon (g/m2)***	***Accumulated hydrocarbon (g/m2)***
Marine Diesel	10	50	100	100	1	10

6.8.1.4 Surface Hydrocarbon Threshold Concentrations

The spill modelling outputs defined the EMBA for surface hydrocarbons resulting from a spill (contact on surface waters) using a threshold of ≥10 g/m² for marine diesel. This threshold is used to define an area within which ecological impacts to the marine environment may occur from surface hydrocarbons. It represents the minimum oil thickness (0.01 mm) at which ecological impacts (e.g. to birds and marine mammals) are expected to occur.

Thresholds for registering biological impacts resulting from contact of surface slicks have been estimated by different researchers at about 10–25 g/m² (French et al., 1999; Koops et al., 2004; National Oceanic and Atmospheric Administration, 1996). Potential impacts of surface slick concentrations in this range for floating hydrocarbons may include harm to seabirds through ingestion from preening of contaminated feathers, or the loss of the thermal protection of their feathers. The 10 g/m² threshold is the reported level of oiling to instigate impacts to seabirds and is also applied to other wildlife, though it is recognised that 'unfurred' animals, where hydrocarbon adherence is less, may be less vulnerable. 'Oiling' at this threshold is taken to be of a magnitude that can cause a response from the most vulnerable wildlife such as seabirds. Due to weathering processes, surface hydrocarbons will have a lower toxicity due to change in their composition over time. Potential impacts to shoreline sensitive receptors may be markedly reduced in instances where there is extended duration until shoreline contact.

A surface threshold of 10 g/m² represents a 'dull metallic colour' (Bonn Agreement, 2015) (**Table 6-13**Table 6-13). A lower concentration of 1 g/m^2 is used to define an area within which social-cultural impacts to the visual amenity of the marine environment may occur. The surface threshold of ≥1 g/m² is based on the relationship between film thickness and appearance (Bonn Agreement oil appearance code, 2015), and represents a 'rainbow sheen' appearance. This threshold is considered below levels which would cause ecological impacts, and instead represents potential for visual amenity impacts. This threshold area is referred to as the 'socio-cultural EMBA'.

Table 6-13: The Bonn Agreement oil appearance code

Appearance (following Bonn visibility descriptors)	Mass per area (g/m²)	Thickness (µm)	Volume per area (L/km^2)
Discontinuous true oil colours	50 to 200	50 to 200	50,000 to 200,000
Dull metallic colours	5 to 50	5 to 50	5000 to 50,000
Rainbow sheen	0.30 to 5.00	0.30 to 5.00	300 to 5000
Silver sheen	0.04 to 0.30	0.04 to 0.30	40 to 300

6.8.1.5 Accumulated Hydrocarbon Threshold Concentrations

Owens et al (1994) define accumulated hydrocarbon <100 g/m² to have an appearance of a stain on shorelines. French-McCay (2009) defines accumulated hydrocarbons ≥100 g/m² to be the threshold

that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat. A threshold of ≥100 g/m² has been adopted as the threshold for shoreline accumulation and has been included in the EMBA. Further, any ecological impacts at the shoreline accumulation threshold may also result in socio-cultural impacts.

6.8.1.6 Dissolved Aromatic Hydrocarbon Threshold Concentrations

Dissolved hydrocarbons present a narcotic effect resulting from uptake into the tissues of marine organisms. This effect is additive, increasing with exposure concentration or with time of exposure (French-McCay, 2002; NRC, 2005). The dissolved aromatic threshold of 50 ppb has been selected as a medium level threshold to approximate the potential toxic effects, particularly sublethal effects to sensitive species, as consistent with the NOPSEMA Oil Spill Modelling Guidance Bulletin (NOPSEMA, 2019).

6.8.1.7 Entrained Hydrocarbon Threshold Concentrations

This threshold is used to define an area within which ecological impacts to the marine environment may occur from entrained hydrocarbons. Therefore, it may also be associated with socio-cultural impacts.

Entrained hydrocarbons present a number of possible mechanisms for toxic exposure to marine organisms. The entrained hydrocarbon droplets may contain soluble compounds, hence have the potential for generating elevated concentrations of dissolved aromatic hydrocarbons (e.g. if mixed by breaking waves against a shoreline). Physical and chemical effects of the entrained hydrocarbon droplets have also been demonstrated through direct contact with organisms; for example, through physical coating of gills and body surfaces, and accidental ingestion (National Research Council, 2005).

The entrained threshold has been selected to be consistent with the NOPSEMA Oil Spill Modelling Guidance Bulletin (NOPSEMA, 2019). An entrained threshold of 100 ppb is considered to be appropriate given the oil characteristics for informing potential impacts to receptors.

6.8.1.8 Scientific Monitoring

A planning area for scientific monitoring is also described in Section 5.6 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 NOPSEMA Bulletin #1 Oil Spill Modelling (2019). This low exposure threshold is based on the potential for exceeding water quality triggers.

A scientific monitoring program would be activated following a Level 2 or 3 unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. This would consider receptors at risk (ecological and socio-economic) for the entire predicted EMBA and in particular, any identified Pre-emptive Baseline Areas (PBAs) for the worst-case credible spill scenario or other identified unplanned hydrocarbon releases associated with the operational activities.

6.8.2 Unplanned Hydrocarbon Release: Vessel Collision

Scarborough OPP – Relevant Impact Assessment Section
Section 7.2.6 – Unplanned Hydrocarbon Release

Context		
Relevant Activities Vessel Operations – **Section 3.7**	**Existing Environment** Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Socio-economic Environment – **Section 4.9**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Loss of hydrocarbons to marine environment due to a vessel collision (e.g. project vessels or third party vessels)			X		X	X	X	A	D	1	M	LCS GP PJ	Broadly Acceptable	EPO 17

Description of Source of Impact/Risk

Background

The largest project vessel is a heavy construction vessel, which has a maximum single fuel tank capacity of 1000 m^3. For the purposes of an indication of the risks associated with a vessel collision for the Petroleum Activities Program, a worst-case loss of volume of 1000 m^3 of MDO is considered an appropriate for rupture of a single fuel tank.

Typical project support vessels have multiple marine diesel tanks typically ranging between 50 m^3 up to a maximum size of approximately 1000 m^3. In the highly unlikely event of a vessel collision involving a project vessel during the Petroleum Activities Program, the vessel will have the capability to pump marine diesel from a ruptured tank to a tank with spare volume in order to reduce the potential volume of fuel released to the environment.

Project vessels will be present in the PAA for the duration of the Petroleum Activities Program. This presence in the area will result in a navigational hazard for other marine users within the immediate area of the vessel.

Concurrent activities

The loss of containment due to collision of project vessels from concurrent activities (outlined in **Section 6.2.1**) is not considered credible due to slow speeds of project vessels, dynamic positioning redundancy, management of simultaneous operations, weather related operability controls and communications.

Industry Experience

Registered vessels or foreign flag vessels in Australian waters are required to report events to the Australian Transport Safety Bureau (ATSB), AMSA or Australian Search and Rescue (AusSAR).

From a review of the ATSB marine safety and investigation reports, one vessel collision occurred in 2011/12 that resulted in a spill of 25–30 L of oil into the marine environment as a result of a collision between a tug and support vessel off Barrow Island. Two other vessel collisions occurred in 2010, one in the port of Dampier, where a support vessel collided with a barge being towed. Minor damage was reported and no significant injury to personnel or pollution occurred. The second 2010 vessel collision involved a vessel under pilot control in port connecting with a vessel alongside a wharf, causing it to sink. No reported pollution resulted from the sunken vessel. These incidents demonstrate the likelihood of only minor volumes of hydrocarbons being released during the highly unlikely event of a vessel collision.

From 2010 to 2011, the ATSB's annual publication defines the individual safety action factors identified in marine accidents and incidents: 42% related to navigation action (2011). Of those, 15% related to poor communication and 42% related to poor monitoring, checking and documentation (ATSB, 2011). The majority of these related to the grounding instances.

Credible Scenario

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

- The identified causes of vessel interaction must result in a collision.
- The collision must have enough force to penetrate the vessel hull.
- The collision must be in the exact location of the fuel tank.
- The fuel tank must be full, or at least of volume which is higher than the point of penetration.

The 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.

The environmental risk analysis and evaluation identified and assessed a range of potential scenarios that could result in a loss of vessel structural integrity, resulting in damage to fuel storage tank(s) and a loss of marine diesel to the marine environment. The likelihood of a collision was assessed as being highly unlikely, given standard vessel operations and equipment in place to prevent collision at sea, and the construction and placement of storage tanks. The largest tank of the support vessel is unlikely to exceed 250 m³. For the purposes of this assessment a worst-case instantaneous loss of 1000 m³ from a diesel tank has been considered. The scenarios considered damage to single and multiple fuel storage tanks in a project vessel due to dropped objects and various combinations of vessel to vessel collisions. A summary of the credible spill scenario resulting from a vessel collision is outlined in **Table 6-14**.

Given the offshore location of the PAA, vessel grounding is not considered a credible risk.

Table 6-14: Summary of credible hydrocarbon spill scenario as a result of vessel collision

Scenario	Hydrocarbon Volumes	Preventative and Mitigation Controls	Credibility
Hydrocarbon release resulting from a collision with a third-party vessel (Loss of containment from the construction vessel fuel tank)	Marine Diesel Oil 1000 m^3 instantaneous	Typically double wall, tanks which are located mid-ship (not bow or stern). Vessels are not anchored and steam at low speeds when relocating within the PAA or providing stand-by cover. Normal maritime procedures would apply during such vessel movements.	**Credible** A vessel collision could potentially result in a release from a construction vessel fuel tank.
Hydrocarbon release caused by vessel collision (support vessel)	250 m^3 instantaneous	Typically double wall, tanks which are located mid-ship (not bow or stern). Vessels are not anchored and steam at low speeds when relocating within the PAA or providing stand-by cover. Normal maritime procedures would apply during such vessel movements.	**Credible** A vessel collision could potentially result in a release from a support vessel fuel tank.
Loss of containment due to collision of project vessels	Marine Diesel Oil 1000 m^3 instantaneous	Slow speeds, dynamic positioning redundancy, management of simultaneous operations, weather related operability controls and communications.	Not-credible Loss of containment due to collision of project vessels during concurrent activities is not considered credible.

Quantitative Hydrocarbon Risk Assessment

Modelling of an instantaneous surface release of 2000 m^3 of marine diesel was conducted by RPS on behalf of Woodside as part of Woodside's Scarborough project quantitative spill risk assessment at field location (RPS, 2019). While this volume is significantly larger than the 1000 m^3 worst-case spill volume from a project vessel, the results of the modelling can be used to demonstrate that a much larger marine diesel spill in the vicinity of the PAA has an EMBA that is not predicted to include any surface slicks above threshold volumes resulting in any shoreline contact or accumulation.

Basing the impact assessment for a vessel collision scenario on this modelling is considered highly conservative and consequently, the EMBA for a 2000 m^3 surface release of marine diesel within the PAA would be considerably smaller than the EMBA described in this EP.

The modelling assessed the extent of a marine diesel spill volume of 2000 m^3 for all seasons, using an historic sample of wind and current data for the region (2006-2015, inclusive). A total of 100 simulations were modelled over an annual period, with each simulation tracked for 42-days. The coordinates of the modelled spill location are detailed in **Table 6-15**.

Table 6-15: Spill release locations for 2000 m^3 MDO spill

Location	Coordinates
FPU location, within the PAA	19° 53' 54.72" S 113° 14' 19.56" E

Hydrocarbon Characteristics

MDO is a non-persistent fuel oil and contains a small proportion of heavy components (or low volatile components) that tend to physically entrain into the upper water column in the presence of moderate winds (i.e. >12 knots) and breaking waves but may re-float to the surface if these conditions abate. In the event of a substantial spill, the heavier components can remain entrained or remain on the sea surface for an extended period. The characteristics of the marine diesel are given in **Table 6-16.**

Marine diesel is a mixture of both volatile and persistent hydrocarbons. Predicted weathering of marine diesel, based on typical conditions in the region, indicates that about 6% of the oil mass should evaporate within the first 12 hours, and a further 35% is expected to evaporate within the first 24 hours (**Figure 6-1**) (RPS, 2019). After this time the majority of the remaining hydrocarbon is entrained into the upper water column. Seven days following the spill, approximately 35–40% would evaporate, 45% would entrain, 15% would decay and approximately 5% would be dissolved.

Given the environmental conditions experienced in the PAA, marine diesel is expected to undergo rapid spreading and this, together with evaporative loss, is likely to result in a rapid dissipation of the spill. Marine diesel distillates tend not to form emulsions at the temperatures found in the region.

Table 6-16: Characteristics of the marine diesel

Hydrocarbon type	Initial density (g/cm³) at 25 ºC	Viscosity (cP @ 25 ºC)	Component BP (ºC)	Volatiles %<180	Semi volatiles % 180–265	Low volatility (%) 265-380	Residual (%) >380
				Non-Persistent			***Persistent***
Marine diesel	0.829	4.0	% of total	6	34.6	54.4	5
			% aromatics	1.8	1.0	0.2	-

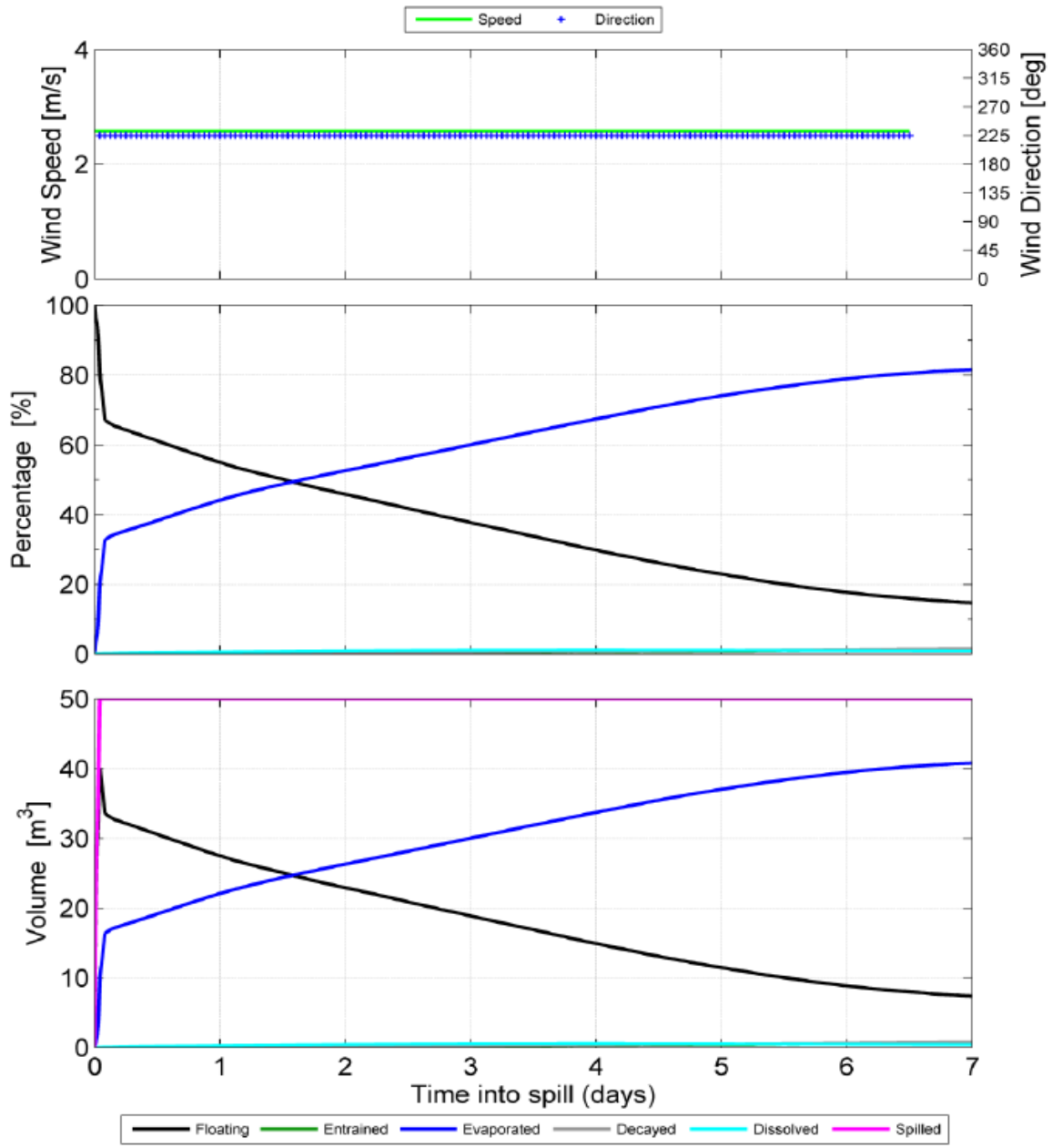


Figure 6-1: Mass balance plot representing, as proportion (middle panel) and volume (bottom panel), the weathering of marine diesel spilled onto the water surface as a one-off release (50 m^3 over one hour) and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature

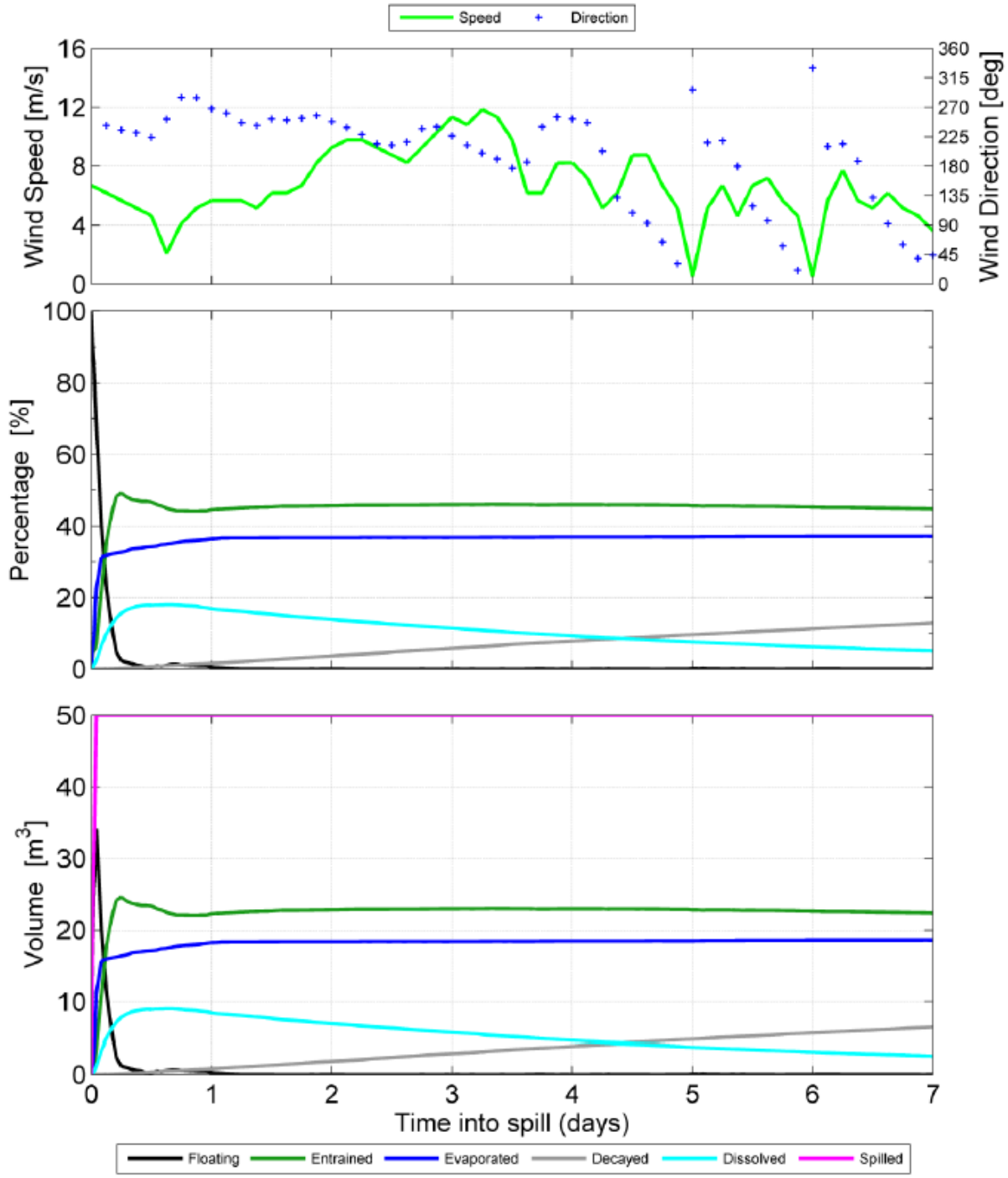


Figure 6-2: Proportional mass balance plot representing weathering of a surface spill of marine diesel as a one-off release (50 m^3 over 1 hour) and subject to variable wind at 27 °C water temperature and 25 °C air temperature (RPS, 2019)

Detailed Impact Assessment

Assessment of Potential Impacts

Environment That May Be Affected

The overall EMBA for the Petroleum Activities Program is based on stochastic modelling, which compiles data from 100 hypothetical worst-case spills under a variety of weather and metocean conditions (as described in **Section 6.8.1**). Spill modelling was undertaken based on an instantaneous surface release of 2000 m^3 of marine diesel, which is much greater than the assumed largest marine diesel tank volume of 1000 m^3 for the largest project vessel (construction vessel). Therefore, the EMBA described in this EP is considered highly conservative. The worst-case distances and probabilities of contact to receptor locations have been chosen as a conservative approach.

As the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean transport mechanism, a different EMBA is discussed for each fate.

Surface Hydrocarbons: If this scenario occurred, a surface hydrocarbon slick would form downcurrent of the release location, with the trajectory dependent on prevailing wind and current conditions at the time. The modelling indicates that the EMBA would be confined to open water, with surface hydrocarbons extending up to about 113 km from the release location at or above the 10 g/m^2 impact threshold. There is a low probability (1%) of the Gascoyne AMP encountering surface hydrocarbons of 10 g/m^2; no other contact with sensitive receptor locations is predicted.

A socio-cultural EMBA for surface hydrocarbons which includes the threshold for visible surface hydrocarbons of 1 g/m^2 may extend up to about 116 km from the release site. There is a low probability (1%) of the Gascoyne AMP encountering surface hydrocarbons of 1 g/m^2.

Entrained Hydrocarbons: Quantitative hydrocarbon spill modelling results are shown **Figure 6-1**. If this vessel collision scenario occurred, a plume of entrained hydrocarbons would form downcurrent of the release location, with the trajectory dependent on prevailing current conditions at the time. The modelling indicates that locations exposed to entrained hydrocarbons at or above the threshold concentration of 100 ppb are restricted to offshore areas up to about 921 km from the release site. Concentrations above 100 ppb are not expected to exceed depths of approximately 15 m below mean sea level (BMSL). The receptors predicted to be contacted by entrained oil concentrations at the 100 ppb threshold are the: Gascoyne AMP (10% probability), Abrolhos Islands AMP (1% probability), and Carnarvon Canyon AMP (1% probability; **Table 6-17**).

Dissolved Hydrocarbons: Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to 249 km from the spill site. Concentrations above 50 ppb are not expected to exceed depths of approximately 15 m BMSL. The modelling predicted a 3% probability of dissolved oil concentrations at ≥50 ppb contacting the Gascoyne AMP; no other receptors were predicted to be contacted at or above the dissolved oil threshold.

Accumulated Hydrocarbons: Accumulated hydrocarbons above threshold concentrations (≥100 g/m^2) were not predicted by the modelling to occur at any location. Floating oil at concentrations equal to or greater than 1 g/m^2 are not predicted to contact any shoreline receptors.

Water Quality

The highly-mixed, open water location and characteristics of hydrocarbons released will result in rapid evaporation and dispersion. However, MDO contains a small proportion of heavy components (or low-volatile components) that tend to physically entrain into the upper water column in the presence of moderate winds (i.e. >12 knots) and breaking waves but may resurface if these conditions abate. If a substantial spill occurred, the heavier components could remain entrained or remain on the sea surface for an extended period and travel significant distances from the source, albeit at low concentrations.

As described above, predicted weathering of marine diesel, based on typical conditions in the region, indicates that about 6% of the oil mass should evaporate within the first 12 hours, and a further 35% is expected to evaporate within the first 24 hours (**Figure 6-1)** (RPS, 2019). After this time the majority of the remaining hydrocarbon is entrained into the upper water column.

The magnitude of potential impact of a change in water quality from unplanned release of MDO is assessed as slight. Receptor sensitivity of water quality is low (low value, open ocean), and therefore the consequence of a release of hydrocarbons on water quality is Negligible (F).

Plankton

Injury/mortality to planktonic species may occur due to a change in water quality following an unplanned hydrocarbon release.

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).

Exposure to hydrocarbons in the water column (entrained or dissolved) can change 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, such as fish, coral and invertebrate eggs and larvae, 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).

When first released, MDO has a higher toxicity due to the presence of the volatile components. Plankton making contact close to the spill source at the time of the spill may be impacted, however, due to low planktonic productivity within the NWMR it is unlikely that large populations of plankton will be affected at the sea surface above thresholds as this is only predicted for the first few days after the spill.

Given hydrocarbon characteristics, expected rapid weathering and then degradation of the entrained component to below impact thresholds, and relatively quick recovery times of plankton, unplanned releases from Scarborough are not expected to have a substantial adverse effect on plankton life cycle and spatial distribution.

There are no Management Plans, Recovery Plans or Conservation Advice related to plankton.

Based on the detailed risk evaluation, the magnitude of potential impact to plankton from unplanned release of MDO is assessed as slight. Receptor sensitivity of plankton is low (low value, open water), and therefore the consequence of a release of hydrocarbons on plankton is Negligible (F).

Fish

Injury/mortality to fish species may occur due to a change in water quality following an unplanned hydrocarbon release. Any surface and subsurface hydrocarbon release could impact fish, as they are widely dispersed throughout the water column.

Impacts to sharks and rays may occur through direct contact with hydrocarbons and contaminate the tissues and internal organs, either through direct contact or via the food chain (consumption of prey). As gill breathing organisms, sharks and rays may be vulnerable to toxic effects of dissolved hydrocarbons (entering the body via the gills) and entrained hydrocarbons (coating of the gills inhibiting gas exchange). In the offshore environment, it is probable that pelagic shark species are able to detect and avoid hydrocarbons by swimming into deeper water or away from the affected areas.

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 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, 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 can 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 can avoid water contaminated with high concentrations of hydrocarbons.

The effects of exposure to oil on the metabolism of fish appear 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 where anaerobic activity is most impacted, probably increasing anaerobic activity to help eliminate ingested oil from the fish (Cohen et al., 2005).

Fish are perhaps most susceptible to the effects of spilled oil in their early life stages, particularly during egg and planktonic larval stages, which can become entrained in spilled oil. Contact with oil droplets can 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). Subtler, chronic effects on the life history of fish because of exposure in early life stages to hydrocarbons include disruption to complex behaviour such as predator avoidance, reproductive and social behaviour (Hjermann et al., 2007). Prolonged exposure of eggs and larvae to weathered concentrations of hydrocarbons in water has also been shown to cause immunosuppression and allows expression of viral diseases (Hjermann et al., 2007).

Adult fish exposed to low hydrocarbon concentrations are likely to metabolise the hydrocarbons and excrete the derivatives, with studies showing that fish can metabolise petroleum hydrocarbons and that accumulated hydrocarbons are released from tissues when the fish is returned to hydrocarbon-free sea water. Several fish communities in these areas are demersal (i.e. living closer to the seabed) where concentrations of entrained hydrocarbons will be lower; any impacts are expected to be highly localised.

Marine fauna with gill-based respiratory systems are expected to have higher sensitivity to exposures of entrained contaminants. Therefore, the receptors most susceptible to dissolved hydrocarbons are fish and whale sharks. Whale sharks may be present in the EMBA in the Gascoyne AMP, which has a low probability (10%) of experiencing entrained hydrocarbon ≥100 ppb. Since MDO does not tend to have a high proportion that dissolves, the Gascoyne AMP has a very low probability (3%) of contacting dissolved hydrocarbons ≥50 ppb; no other receptors were predicted to be contacted above this threshold.

When first released, MDO has a higher toxicity due to the presence of the volatile components. Individual fish making contact close to the spill source at the time of the spill may be impacted. Fish presence is generally concentrated in waters closer to shore. Although fish presence may occur throughout the entire PAA and defined EMBA, it is unlikely that a large number of fish will be affected at the sea surface above thresholds. Mobile transient fauna are not expected to remain within entrained hydrocarbon plumes for an extended time. Therefore, no acute impacts or risks associated with entrained exposures from an unplanned MDO release are expected. Any impacts from this exposure are expected to result in localised short-term effects to limited small numbers of juvenile fish and prey species (larvae and planktonic organisms), which are not expected to affect population viability and recruitment of fish. Consequently, diverse fish assemblages are not expected to be significantly impacted.

Although potential impacts could include mortality or sub-lethal injury/illness of pelagic fish, this would be expected to comprise a small proportion of the resident and transitory population. Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds and degradation of entrained fractions, and the mobile transient nature of fish, unplanned releases of MDO are not expected to have a substantial adverse effect on the population or spatial distribution of fish; or substantially modify, destroy or isolate an area of important habitat for migratory species. Additionally, unplanned releases will not seriously disrupt the lifecycle of an ecologically significant proportion of any migratory fish species.

There are specific conservation advices for some fish species which identify habitat degradation/modification as a key threat. While for some species there are specific requirements (e.g. sawfish), no specific requirements have been identified for relevant species (i.e. species identified as having potential to occur in the EMBA).

Based on the detailed risk evaluation, the magnitude of potential impacts to fish from unplanned hydrocarbon releases is assessed as slight. Receptor sensitivity of fish is high (high value fauna), and therefore the consequence of a release of hydrocarbons on fish is Minor (D).

Marine Mammals

A change in marine fauna behaviour or injury/mortality to marine mammals may occur due to a change in water quality after an unplanned hydrocarbon release.

Air-breathing fauna such as marine mammals are most at risk from surface exposures due to the high volatile components. Marine mammals that have direct physical contact with surface, entrained or dissolved aromatic hydrocarbons may suffer surface fouling, ingest hydrocarbons and inhale toxic vapours. This may result in the irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts and organs, impairment of the immune system or neurological damage (Helm et al., 2015). If prey (fish and plankton) are contaminated, this can result in the absorption of toxic components of the hydrocarbons (PAHs).

In a review of cetacean observations in relation to a number of large-scale hydrocarbon spills, Geraci (1988) found little evidence of mortality associated with hydrocarbon spills. However, behavioural disturbance (i.e. avoiding spilled hydrocarbons) was observed in some instances for several species of cetaceans. This suggests that cetaceans are able to detect and avoid surface slicks. While this reduces the potential for physiological impacts from contact with hydrocarbons, active avoidance of an area may disrupt behaviours such as migration, or displace individuals from important habitat, such as foraging, resting or breeding.

When first released, MDO has a higher toxicity due to the presence of the volatile components. Individual cetaceans making contact close to the spill source at the time of the spill may be impacted. Cetacean presence is generally more concentrated in waters closer to shore with the exception of false killer whales. Although cetacean presence may occur throughout the PAA and defined EMBA, it is unlikely that a large number of cetaceans will be affected at the sea surface above thresholds, as only the Gascoyne AMP will be contacted with surface oil and this is highly unlikely to occur (1% probability of 1 g/m^2)

Although potential impacts could include mortality or sub-lethal injury/illness of marine mammals, this would be expected to comprise a small proportion of the resident and transitory population. Given hydrocarbon characteristics, expected rapid weathering of surface oil to below impact thresholds, and the mobile transient nature of marine mammals and potential avoidance behaviour, unplanned releases of MDO are not expected to have a substantial adverse effect on the population or spatial distribution of marine mammals; or substantially modify, destroy or isolate an area of important habitat for migratory species. Additionally, unplanned releases will not seriously disrupt the lifecycle of an ecologically significant proportion of any migratory species.

There are specific conservation advices for some species which identify noise interference and vessel disturbance as key threats. While hydrocarbon spills are not explicitly identified as a threat, the sei whale conservation advice does include the management of physical disturbance and development activities. No explicit management actions are identified relevant to hydrocarbon spills.

Potential impacts are unlikely to lead to mortality or sub-lethal injury/illness of an EPBClisted protected species. Based on the detailed risk evaluation, the magnitude of potential impacts to marine mammals (focused on changes in behaviour) from unplanned MDO releases is assessed as slight. Receptor sensitivity of marine mammals is high (high value fauna), and therefore the consequence of a release of hydrocarbons on marine mammals is Minor (D).

Marine Reptiles

A change in marine fauna behaviour or injury/mortality to marine reptiles may occur due to a change in water or sediment quality following an unplanned hydrocarbon release.

Marine reptiles can be impacted by surface exposure when they surface to breathe, and by shoreline accumulation of hydrocarbons when breeding and nesting.

Hydrocarbons in surface waters may impact turtles when they surface to breathe and inhale toxic vapours. Their breathing pattern, involving large 'tidal' volumes and rapid inhalation before diving, results in direct exposure to petroleum vapours which are the most toxic component of the hydrocarbon spill (Milton and Lutz, 2003). This can lead to lung damage and congestion, interstitial emphysema, inhalant pneumonia and neurological impairment (National Oceanic and Atmospheric Administration, 2010). Contact with entrained hydrocarbons can result in hydrocarbon adherence to body surfaces, irritating mucous membranes in the nose, throat and eyes, leading to inflammation and infection (Gagnon and Rawson, 2010).

Adult sea turtles exhibit no avoidance behaviour when they encounter hydrocarbon spills (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 gland (Lutcavage et al., 1995).

When first released, MDO has a higher toxicity due to the presence of the volatile components. Individual turtles making contact close to the spill source at the time of the spill may be impacted. Turtle presence is generally more concentrated in waters closer to shore, with infrequent presence of turtles as far offshore as the PAA. Although turtle presence may occur throughout the PAA and defined EMBA, it is unlikely that a large number of turtles will be affected. With no shoreline accumulation, there is negligible potential for impacts to turtle nesting beaches.

Impacts to sea snakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for marine turtles.

Potential impacts are unlikely to lead to mortality or sub-lethal injury/illness of an EPBClisted protected species. Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the mobile transient nature of individuals, an unplanned release from a vessel collision is not expected to substantially modify, destroy or isolate an area of important habitat for migratory species. It is not expected that unplanned releases will have a substantial adverse effect on the population, or spatial distribution of marine reptiles; or seriously disrupt the lifecycle of an ecologically significant proportion of any migratory species.

Impacts to turtles from unplanned hydrocarbon releases are to be managed in accordance with the Recovery Plan for marine turtles in Australia (Commonwealth of Australia, 2017). The Recovery Plan identifies ensuring spill risk strategies and response programs include management for turtles and their habitats. In addition, there is in place approved Conservation Advice for the short-nosed sea snake (DSEWPaC, 2011), which includes ensuring there is no anthropogenic disturbance in areas where the species occurs, excluding necessary actions to manage the conservation of the species.

Based on the detailed risk evaluation, the magnitude of potential impacts to marine reptiles from unplanned hydrocarbon releases is assessed as no lasting effects (from change in fauna behaviour) and slight (from injury/mortality to fauna). Receptor sensitivity of marine reptiles is high (high value fauna), and therefore the overall consequence of a release of hydrocarbons on marine reptiles is Minor (D).

Seabirds and Migratory Shorebirds

A change in marine fauna behaviour or injury/mortality to seabirds and migratory shorebirds may occur due to a change in water or sediment quality following an unplanned hydrocarbon release.

Seabirds and migratory birds are particularly vulnerable to contact with floating hydrocarbons, which may mat feathers. This may lead to hypothermia from loss of insulation and ingestion of hydrocarbons when preening to remove hydrocarbons. Both impacts may result in mortality (Hassan and Javed, 2011). Pathways of biological exposure that can result in impact may occur through ingesting contaminated fish (nearshore waters) or invertebrates (intertidal foraging grounds such as beaches, mudflats and reefs). Ingestion can also lead to internal injury to sensitive membranes and organs (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 losing adult birds.

When first released, MDO has a higher toxicity due to the presence of the volatile components. Individual birds making contact close to the spill source at the time of the spill may be impacted. Bird presence within the NWMR is more concentrated in waters closer to shore with the potential for individual migratory birds within the PAA. Although

bird presence may occur throughout the PAA and defined EMBA, it is unlikely that a large number of birds will be affected at the sea surface above thresholds as this is only predicted for the first five days.

No shoreline contact is predicted, therefore there is negligible likelihood of impact to significant nesting and / or roosting sites.

Although potential impacts could include mortality or sub-lethal injury/illness of birds, this would be expected to comprise a small proportion of the resident and transitory population. Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the mobile transient nature of individuals, an unplanned release from a vessel collision is not expected to substantially modify, destroy or isolate an area of important habitat for migratory species.

There are specific conservation advices for some species which identify habitat degradation as the key threat, but generally no explicit management actions are identified relating to hydrocarbon spills.

Based on the detailed risk evaluation, the magnitude of potential impact to seabirds and migratory shorebirds from unplanned hydrocarbon releases is assessed as having no lasting effects (from change in fauna behaviour) and slight (from injury/mortality to fauna). Receptor sensitivity of seabirds and migratory shorebirds is high (high value fauna), and therefore the overall consequence of a release of hydrocarbons on seabirds and migratory shorebirds is Minor (D).

Key Ecological Features

A change in habitat may occur due to a change in water or sediment quality that could impact KEFs.

KEFs potentially impacted by a marine diesel spill from a vessel collision event are:

- Exmouth Plateau
- Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula
- Continental slope demersal fish communities
- Ancient coastline at 125 depth contour
- Wallaby Saddle
- Western demersal slope and associated fish communities

These KEFs are primarily defined by seabed geomorphological features and/or indicate a potential for increased biological productivity and, therefore, ecological significance.

The consequences of a marine diesel spill from a vessel collision may impact the values of the KEFs affected (for the values of each KEF see Woodside's Existing Environment (**0I**). Potential impacts to the above KEFs include impacts to demersal fish populations and reduced biodiversity. Impacts to benthic habitats are not predicted as hydrocarbons (surface, entrained and dissolved) will be limited to the upper layers of the water column. Most of the KEFs within the EMBA have relatively broad-scale distributions and are unlikely to be significantly impacted.

Given the weathering characteristics of MDO, exposure would be restricted to surface (including the upper water column); no interaction with benthic habitats in deep water areas is predicted. As such, there is unlikely to be adverse impact on marine ecosystem functioning or integrity.

Based on the assessment, the magnitude of a potential impact to KEFs associated with a release of hydrocarbons is no lasting effect. Receptor sensitivity of KEFs is high (high value), and therefore the consequence of a release of hydrocarbons on KEFs is slight (E).

AMPs

The quantitative spill risk assessment results indicate that the open water environment protected within the Gascoyne AMP, Abrolhos Islands AMP and Carnarvon Canyon AMP may be affected by the released hydrocarbons (refer to **Table** 6-20).

The Gascoyne AMP has the potential to be contacted by entrained hydrocarbons (10% probability), dissolved hydrocarbons (3% probability) and surface hydrocarbons (1% probability) at or above the defined ecological effect concentrations (100 ppb, 50 ppb and 10 g/m^2, respectively). Additionally, the Abrolhos Islands AMP and Carnarvon Canyon AMP have a 1% probability of being contacted by entrained hydrocarbons at or above the 100 ppb threshold concentration.

Potential impacts on the values of the AMPs (refer to Woodside's Existing Environment (**0I**)) are discussed in the relevant sections above for ecological and physical values and below for socio-economic and cultural values. The AMPs contains marine fauna and biological communities, which are considered to be of important environmental value that the AMPs are intended to protect. A spill is unlikely to result in significant impacts based on the nature of the spilled hydrocarbons, including rapid weathering.

Based on the assessment, the magnitude of a potential impact to the above AMPs associated with a release of hydrocarbons is slight. Receptor sensitivity of the AMPs is high (high value), and therefore the consequence of a release of hydrocarbons on the AMPs is Minor (D).

Commonwealth and State Managed Fisheries

A change in marine fauna behaviour or injury or mortality to marine fauna – in particular to commercially targeted species, or their prey species (e.g. plankton) – can impact fisheries.

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 depends on the magnitude of the contamination. Fish have a high capacity to metabolise these hydrocarbons while crustaceans (such as prawns) have a reduced ability (Yender et al., 2002). Seafood safety is a major concern associated with spill incidents. Therefore, actual or potential contamination of seafood can affect commercial and recreational fishing and can impact seafood markets long after any actual risk to seafood from a spill has subsided (Yender et al., 2002).

A major spill could result in the establishment of an exclusion zone around the spill affected area. There would be a temporary prohibition on fishing activities for a period and subsequent potential for economic impacts to affected commercial fishing operators. Additionally, hydrocarbon can foul fishing equipment such as traps and trawl nets, requiring cleaning or replacement.

MDO presence in the water would be restricted to the surface and upper water column only. Dissolved aromatics (i.e. the form that is bioavailable) are in such small concentrations in MDO that their effect in the marine environment is negligible; i.e. tainting from an MDO exposure is not considered likely to occur. Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of MDO would only be in place days after release, therefore physical displacement to vessels is unlikely to be a significant impact.

A number of Commonwealth and State fishery management areas are located within the PAA and EMBA. FishCube data were requested to analyse the potential for interaction of fisheries with the PAA, which was used to determine consultation with State Fisheries who may be impacted by proposed petroleum activities (Department of Primary Industries and Regional Development [DPIRD], 2021). Table 4-19 provides an assessment of the potential interaction provides further detail on the fisheries that have been identified through desk-based assessment and consultation (Section 5). No fisheries were identified as having a potential interaction with the Petroleum Activities Program.

In the highly unlikely event of a release of marine diesel to the environment as a result of vessel collision there may be the presence of hydrocarbons in areas used by the fisheries that overlap the EMBA (Table 4-19). However, given the distance from the PAA where this event may occur, the type of hydrocarbon (with up to 41% evaporating within the first 24 hours) and duration of exposure, no significant impact from a marine diesel spill is predicted

Although potential impacts from a worst case spill could include mortality or sub-lethal injury/illness of pelagic fish (described in the specific receptor evaluation), this would be expected to comprise a small proportion of the resident and transitory population. Given the hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the distance from the PAA and lack of fishing effort, an unplanned hydrocarbon spill from the Petroleum Activities Program is not expected to have an adverse effect on the sustainability of commercial fishing; or to interfere with other marine users.

Based on the detailed risk evaluation, the magnitude of potential impacts to Commonwealth and State managed fisheries from an unplanned hydrocarbon release is assessed as having no lasting effect. Receptor sensitivity of commonwealth and state managed fisheries is high (high value marine user), and therefore the consequence of a release of hydrocarbons on commonwealth and state managed fisheries is Slight (E).

Shipping

In the event of a spill, an exclusion zone may be established around the spill affected area. This could result in exclusion of other users such as shipping vessels or vessels used by the mining and petroleum industries. Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of MDO would only be in place for days after release, therefore physical displacement to vessels is unlikely to be a significant impact.

Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, short duration of displacement, and the offshore location of the PAA, unplanned releases of MDO are not expected to interfere with shipping to a greater extent than necessary.

Based on the assessment, the magnitude of a potential impact to shipping associated with an unplanned release of hydrocarbons is slight. Receptor sensitivity of shipping is medium (medium value user), and therefore the consequence of a release of hydrocarbons on shipping is Slight (E).

Industry

The proposed Equus Development Project is located about 70 km east of the PAA. No other facilities are located within the EMBA. In the event of a major spill, an exclusion zone may be established around the spill affected area. This could result in exclusion of other users such as vessels used by the mining and petroleum industries.

Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of MDO would only be in place days after release, therefore physical displacement to vessels is unlikely to be a significant impact.

Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the offshore location of the PAA and distance to relevant industries, unplanned releases from Scarborough are not expected to interfere with other marine users than a greater extent than necessary.

Based on the assessment, the magnitude of a potential impact to industry associated with an unplanned release of hydrocarbons is slight. Receptor sensitivity of industry is medium (medium value user), and therefore the consequence of a release of hydrocarbons on industry is Slight (E).

Table 6-17: Key receptor locations and sensitivities potentially contacted above impact thresholds by the vessel collision scenario with summary hydrocarbon spill contact (table cell values correspond to probability of contact [%])

Environmental setting	Location / name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions in Woodside's Risk Management Procedure																												Probability of hydrocarbon contact (diesel) (%) Note: the probability is based on stochastic modelling of 100 hypothetical worst-case spills under a variety of weather and metocean conditions					
		Physical		Biological																					Socio-economic and Cultural					Socio-cultural EMBA		Ecological EMBA			
				Marine Primary Producers			*Other Communities / Habitats*								*Protected Species*									*Other Species*											
		Open water – (pristine)	*Marine Sediment – (pristine)*	*Coral reef*	*Seagrass beds / Macroalgae*	*Mangroves*	*Spawning/nursery areas*	*Open water – Productivity/upwelling*	*Non biogenic coral reefs*	*Offshore filter feeders and/or Deepwater benthic communities*	*Nearshore filter feeders*	*Sandy shores*	*Estuaries / tributaries / creeks / lagoons (inclusive mudflats)*	*Rocky shores*	*Cetaceans – migratory whales*	*Cetaceans – dolphins and porpoises*	*Dugongs*	*Pinnipeds (sea lions and fur seals)*	*Marine turtles*	*Sea snakes*	*Whale sharks*	*Sharks and rays*	*Sea birds and/or migratory shorebirds*	*Pelagic fish populations*	*Resident /Demersal Fish*	*Fisheries – commercial*	*Fisheries – traditional*	*Tourism and Recreation*	*Protected Areas / Heritage – European and Indigenous / Shipwrecks*	*Offshore Oil and Gas Infrastructure (topside and subsea)*	Surface hydrocarbon (1–10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
Offshore	Gascoyne AMP	✓	✓					✓							✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	1	-	1	10	3	-
	Abrolhos Islands MP	✓	✓	✓	✓		✓	✓		✓					✓	✓		✓	✓	✓		✓	✓	✓	✓	✓		✓	✓		-	-	-	1	-	-
	Carnarvon Canyon MP	✓	✓					✓		✓													✓	✓	✓			✓		-	-	-	1	-	-

Summary of Assessment Outcomes					
Receptor	***Impact***	***Receptor Sensitivity***	***Risk Consequence***	***Likelihood***	***Risk Rating***
Water quality	Change in water quality	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Plankton	Injury/ mortality to fauna	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Fish	Change in fauna behaviour	High value species	Minor (D)	Highly Unlikely	Moderate
	Injury/mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
Marine mammals	Change in fauna behaviour	High value species	Minor (D)	Highly Unlikely	Moderate
	Injury/mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
Marine reptiles	Change in fauna behaviour	High value species	Slight (E)	Highly Unlikely	Low
	Injury/ mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
Seabirds and migratory shorebirds	Change in fauna behaviour	High value species	Slight (E)	Highly Unlikely	Low
	Injury/mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
AMPs	Change in habitat	High value habitat	Minor (D)	Highly Unlikely	Moderate
KEFs	Change in habitat	High value habitat	Slight (E)	Highly Unlikely	Low
Commonwealth and State managed fisheries	Changes to the functions, interests or activities of other users	High value marine user	Slight (E)	Highly Unlikely	Low
Shipping	Changes to the functions, interests or activities of other users	Medium value users	Slight (E)	Highly Unlikely	Low
Industry	Changes to the functions, interests or activities of other users	Medium value	Slight (E)	Highly Unlikely	Low
Overall Risk Consequence/Risk Rating: The overall risk rating for an unplanned hydrocarbon release resulting from a vessel collision is Moderate based on a Minor consequence, to the high value receptors (marine fauna, AMPs and KEFs), and a highly unlikely likelihood. The risk consequence/risk rating for individual receptors are consistent with the levels rated in the OPP.					

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 30 (Prevention of Collisions) 2016, including:	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of interference with	Controls based on legislative requirements – must be adopted.	Yes **C 8.1**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• adherence to steering and sailing rules including maintaining look-outs (e.g. visual, hearing, radar etc.), proceeding at safe speeds, assessing risk of collision and taking action to avoid collision (monitoring radar) • adherence to navigation light display requirements, including visibility, light position/shape appropriate to activity • adherence to navigation noise signals as required.		other marine users resulting in a collision.		
Marine Order 21 (Safety and emergency arrangements) 2016, including: • adherence to minimum safe manning levels • maintenance of navigation equipment in efficient working order (compass/radar). • navigational systems and equipment required are those specified in Regulation 19 of Chapter V of SOLAS • AIS that provides other users with information about the vessel's identity, type, position, course, speed, navigational status and other safety-related data.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of interference with other marine users resulting in a collision.	Controls based on legislative requirements – must be adopted.	Yes **C 8.2**
Marine Order 27 (safety of navigation and radio equipment) 2016: • navigational systems and equipment mentioned in Regulations 7 to 11 of Chapter IV of SOLAS are installed on board vessels • maintenance of navigation equipment in efficient working order (compass/radar)	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of interference with other marine users resulting in a collision.	Controls based on legislative requirements – must be adopted.	Yes **C 8.3**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• navigational system and equipment required are those specified in Regulation 19 and 20 of SOLAS for the vessel are type approved and installed on board vessels • navigational activities and incidents of importance to safety of navigation on the vessel are recorded • Automatic Identification System that provides other users with information about the vessel's identity, type, position, course, speed, navigational status and other safety-related data.				
Establishment of temporary exclusion zones by relevant vessels which are communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Establishment of a temporary exclusion zones around vessels reduces the likelihood of interaction with other marine users.	Controls based on legislative requirements – must be adopted.	Yes **C 2.2**
In the event of a spill, emergency response activities implemented in accordance with the OPEP.	F: Yes CS: Costs associated with implementing response strategies vary dependent on nature and scale of spill event. Standard practice.	Potentially reduces consequence by implementing response to reduce impacts to the marine environment,	Control based on regulatory requirement – must be adopted.	Yes **C 8.4**
Arrangements supporting the activities in the OPEP (per **Table 7-8**) will be tested to ensure the OPEP can be implemented as planned.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirement based on vessel class. Unlikely to have a significant reduction in consequence.	Controls based on legislative requirements – must be adopted.	Yes **C 8.5**
Good Practice				
Have a support vessel on standby during all activities to communicate with third-party vessels and help maintain a safety exclusion zone.	F: Yes. CS: Additional costs.	Given the legislative controls in place and the duration of the activities, as well as the mobility of most project vessels; using a support vessel will provide only a small reduction in the likelihood of a	Grossly disproportionate.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
		collision with a third party vessel.		
Notify AHO of activities and movements will be notified no less than four working weeks prior to scheduled activity commencement date.	F: Yes. CS: Minimal cost. Standard practice.	Notification of AHO will enable them to update maritime charts thereby reducing the likelihood of a collision with a third-party vessel.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 2.3**
Notify AMSA JRCC of activities and movements of the activity 24 to 48 hours before operations commence.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the Petroleum Activities Program to other marine users ensures they are informed and aware, thereby reducing the likelihood of a collision with a third-party vessel occurring	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 2.5**
Develop SIMOPS management plan when working in vicinity of other Woodside operations / activities.	F: Yes. CS: Minimal cost. Standard practice.	SIMOPS management plans between Woodside operated vessels in the PAA will reduce the likelihood of a collision occurring.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 8.6**
Mitigation: Oil spill response	Refer to **Appendix D.**			
Professional Judgement – Eliminate				
Eliminate use of vessels.	F: No. The use of vessels is required to conduct the Petroleum Activities Program. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
Risk Based Analysis				
A quantitative spill risk assessment was undertaken (see detail above).				
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, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned loss of hydrocarbon as a result of a vessel collision. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of risk and associated impacts assessed in this section are provided in Section 7.2.6.4 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:**

- Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to an unplanned hydrocarbon release from a vessel collision have been adopted.
- There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.

Acceptability Statement:

The impact assessment has determined that an accidental hydrocarbon release as a result of a vessel collision represents a moderate current risk rating and is unlikely to result in a risk consequence greater than Minor. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. 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 adopted controls are considered consistent with industry legislation, codes and standards, good practice and professional judgement and meet the requirements and expectations of Australian Marine Orders, AMSA and AHO identified during impact assessment and stakeholder consultation. The potential risks and consequences are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks and consequences of a loss of vessel structural integrity to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 17 No release of hydrocarbons to the marine environment due to a vessel collision associated with the Petroleum Activities Program.	**C 8.1** Marine Order 30 – Prevention of collisions – 2016, including: • adherence to steering and sailing rules including maintaining look-outs (e.g. visual, hearing, radar, etc), proceeding at safe speeds, assessing risk of collision and taking action to avoid collision (monitoring radar) • adherence to navigation light display requirements, including visibility, light position/shape appropriate to activity • adherence to navigation noise signals as required.	**PS 8.1.1** Project vessels compliant with Marine Orders 30 (Prevention of Collisions) 2016 (which requires vessels to be visible at all times) to prevent unplanned interaction with marine users.	**MC 8.1.1** Marine Assurance inspection records demonstrate compliance with standard maritime safety procedures (Marine Orders 21, 27 and 30).

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	C 8.2 Marine Orders 21 (Safety and emergency arrangements) 2016, including: • adherence to minimum safe manning levels • maintenance of navigation equipment in efficient working order (compass/radar) • navigational systems and equipment required are those specified in Regulation 19 of Chapter V of SOLAS • AIS that provides other users with information about the vessel's identity, type, position, course, speed, navigational status and other safety-related data.	**PS 8.2.1** Project vessels compliant with Marine Orders Marine Orders 21 (Safety and emergency arrangements) 2016 to prevent unplanned interaction with marine users.	
	C 8.3 Marine Order 27 (safety of navigation and radio equipment) 2016: • navigational systems and equipment mentioned in Regulations 19 and 20 of Chapter V of SOLAS for the vessel are type approved and installed on board vessels navigational system and equipment required are those specified in Regulation 19 of Chapter V of Safety of Life at Sea • navigational systems and equipment are maintained in working order • navigational activities and incidents of importance to safety of navigation on the vessel are recorded. Automatic Identification System that provides other users with information	**PS 8.3.1** Project vessels compliant with Marine Orders Marine Orders 27 (Safety of navigation and radio equipment) 2016 to prevent unplanned interaction with marine users.	

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	about the vessel's identity, type, position, course, speed, navigational status and other safety-related data.		
	C 2.2 See **Section 6.7.2**	**PS 2.2.1** See **Section 6.7.2**	**MC 2.2.1** See **Section 6.7.2**
			MC 2.2.2 **See Section 6.7.2**
	C 8.4 In the event of a spill, emergency response activities implemented in accordance with the OPEP.	**PS 8.4.1** In the event of a spill the OPEP requirements are implemented.	**MC 8.4.1** Records of completed incident documentation.
	C 8.5 Arrangements supporting the activities in the OPEP (per **Table 7-8**) will be tested to ensure the OPEP can be implemented as planned.	**PS 8.5.1** Exercises/tests will be conducted in alignment with the frequency identified in **Table 7-8**.	**MC 8.5.1** Testing of arrangement records confirm that emergency response capability has been maintained.
		PS 8.5.2 Testing of arrangement records confirm that emergency response capability has been maintained.	**MC 8.5.2** Emergency Management dashboard confirms that minimum level of personnel trained for core OPEP roles are available.
	C 8.6 Develop SIMOPS management plan when working in vicinity of other Woodside operations / activities.	**PS 8.6.1** SIMOPS management plan is in place when working in vicinity of other Woodside operations / activities.	**MC 8.6.1** Records indicate a SIMOPS management plan has been created.
	C 2.3 See **Section 6.7.2**	**PS 2.3.1** See **Section 6.7.2**	**MC 2.3.1** See **Section 6.7.2**
	C 2.5 See **Section 6.7.2**	**PS 2.5** See **Section 6.7.2**6.6.4	**MC 2.5.1** See **Section 6.7.2**
	Detailed preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are presented in Appendix D.		

6.8.3 Unplanned Hydrocarbon Release: Bunkering

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.2.6 – Unplanned Hydrocarbon Release		
Context		
Relevant Activities Vessel Operations – **Section 3.7**	**Existing Environment** Physical Environment – **Section 4.4** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Socio-economic Environment – **Section 4.9**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Loss of hydrocarbons (diesel/jet fuel) to marine environment from bunkering/ refuelling			✓			✓		A	D	1	M	LC S GP PJ	Broadly Acceptable	EPO 18

Description of Source of Impact/Risk

Diesel LOC from bunkering

Bunkering of marine diesel between vessels as well as the possible refuelling of cranes, helicopters and other equipment may take place.

Three 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, due to operational stress or other integrity issues could spill marine diesel to the deck and/or into the marine environment. This would be in the order of less than 200 L, based on the likely volume of a bulk transfer hose (assuming a failure of the dry break and complete loss of hose volume).
- Partial or total failure of a bulk transfer hose or fittings during bunkering, combined with a delay to shutoff fuel pumps, for a period of up to fifteen minutes, resulting in approximately 50 m^3 marine diesel lost to the deck and/or into the marine environment.
- Partial or total failure of a bulk transfer hose or fittings during helicopter refuelling could spill aviation jet fuel to the helicopter deck and/or into the marine environment. All helicopter refuelling activities are closely supervised and leaks on the helideck are considered to be easily detectable. In the event of a leak, transfer would cease immediately. The credible volume of such a release during helicopter refuelling would be in the order of <100 L.

Given the limited volume of the potential release and offshore location no modelling has been undertaken as it is within significantly less than the 2000 m^3 of MDO in **Section 6.8.2**.

Detailed Impact Assessment

Assessment of Potential Impacts

An unplanned hydrocarbon release during bunkering has the potential to result in the following impacts:

- change in water quality
- change in fauna behaviour

A 55 m^3 (55,000L) marine diesel surface release as a result of bunkering activities is expected to be confined to within several kilometres of the release site, and well within the EMBA identified for the vessel collision scenario detailed in **Section 6.8.2**.

In the unlikely event of an unplanned hydrocarbon release from bunkering, the limited volume may lead to minor impacts to megafauna, plankton and fish populations (surface and water column biota) that are within the spill affected area. No impacts to commercial fisheries are expected.

The potential biological and ecological impacts associated with much larger hydrocarbon spills (i.e. vessel collision) are presented in **Section 6.8.2** and include behavioural changes to fish, marine mammals and marine reptiles. The extent of the EMBA associated with a marine diesel spill from bunkering will be much reduced in terms of spatial and temporal scales, and hence, potential impacts from bunkering are considered Minor.

Summary of Assessment Outcomes

Receptor	*Impact*	*Receptor Sensitivity*	*Risk Consequence*	*Likelihood*	*Risk rating*
Water quality	Change in water quality	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Migratory Shorebirds and Seabirds	Injury/mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
Fish		High value species	Minor (D)	Highly Unlikely	Moderate
Marine Mammals		High value species	Minor (D)	Highly Unlikely	Moderate
Marine Reptiles		High value species	Minor (D)	Highly Unlikely	Moderate

Overall Risk Rating: The overall risk rating for unplanned discharge of hydrocarbons during bunkering is Moderate based on a Minor risk consequence to the high value receptors (marine fauna) and a highly unlikely likelihood. The risk consequence/risk rating for individual receptors are consistent with the levels rated in the OPP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 91 (marine pollution prevention – oil) 2014, requires Shipboard Oil Pollution Emergency Plan (SOPEP) /Spill Monitoring Programme Execution Plan (SMPEP) (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	By ensuring a SOPEP / SMPEP is in place for the vessel, the likelihood of a spill entering the marine environment is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Controls based on legislative requirements – must be adopted.	Yes **C 7.3**
The Australian Government Civil Aviation Safety Authority CAAP 92-4(0) 'Guidelines for the development and operation of off-shore helicopter landing sites, including vessels.	F: Yes. CS: Minimal cost. Standard practice.	Reduced the likelihood of an unplanned release during helicopter operations. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes C 9.1
Good Practice				
Bunkering equipment controls: • All hoses that have a potential environmental risk following damage or failure shall be linked to the vessel's preventative maintenance system. • All bulk transfer hoses shall have current certification and be in good condition, and inspected as required. • There shall be dry-break couplings and flotation on fuel hoses. • There shall be an adequate number of appropriately stocked, located and maintained spill kits.	F: Yes. CS: Minimal cost. Standard practice.	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 9.2
Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: • Implement a completed PTW and/or JSA for the hydrocarbon bunkering/refuelling operation. • Visually monitor gauges, hoses, fittings and the sea	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	Benefits outweigh cost/sacrifice.	Yes C 9.3

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
surface during the operation. • Check hoses prior to commencement. • Commence bunkering/refuelling in daylight hours. If the transfer is to continue into darkness, the JSA risk assessment must consider lighting and the ability to determine if a spill has occurred. • Do not transfer hydrocarbons in marginal weather conditions.		result, the overall risk is reduced.		
Mitigation: Oil spill response.	Refer to **Appendix D.**			
Professional Judgement - Eliminate				
Vessels brought into port to refuel.	F: No. It is not operationally practical to transit vessels back to port for refuelling based on the frequency of the refuelling requirements and potential maximum distance from the nearest port. CS: Significant due to schedule delay and vessel transit costs / risks, increased emissions and day rates.	Eliminates the risk in the PAA, However, moves risk to another location. Therefore, no overall benefit.	Disproportionate. The cost/sacrifice outweighs the benefit gained.	No
Professional Judgement – Substitute				
No additional controls identified				
Professional Judgement – Engineered Solution				
No additional controls identified				

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, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned loss of hydrocarbon as a result of a bunkering incident. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.1.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:**

- Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to an unplanned hydrocarbon release from bunkering have been adopted.
- There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.

Acceptability Statement:

The impact assessment has determined that accidental discharge of hydrocarbons as a result of bunkering failure represents a moderate current risk rating and is unlikely to result in a risk consequence greater than Slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. 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 adopted controls are considered consistent with industry legislation, codes and standards, good practice and professional judgement and meet the requirements and expectations of Australian Marine Orders.

The potential risks and consequences are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of a loss of hydrocarbons during bunkering / refuelling to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 18 Undertake the Petroleum Activities Program in a manner that will prevent an unplanned release of chemicals or non-process hydrocarbons to the marine environment resulting in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**C 7.3** See **Section 6.7.7**	**PS 7.3** See **Section 6.7.7**	**MC 7.3** See **Section 6.7.7**
	C 9.1 Helicopter fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily in accordance with the Australian Government Civil Aviation Safety Authority CAAP 92-4(0) 'Guidelines for the development and operation of off-shore helicopter landing sites, including vessels.	**PS 9.1.1** Failure of primary containment in storage areas does not result in loss to the marine environment.	**MC 9.1.1** Records confirms all liquid chemicals and fuel are stored in bunded/secondarily contained areas when not being handled/moved temporarily.
	C 9.2 Bunkering equipment controls: • All hoses that have a potential environmental risk following damage	**PS 9.2.1** To ensure damaged equipment is replaced prior to failure.	**MC 9.2.1** Records confirm vessel bunkering equipment is subject to systematic integrity checks.
		PS 9.2.2	**MC 9.2.2**

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	or failure shall be linked to the vessel's preventative maintenance system. • All bulk transfer hoses shall have current certification and be in good condition, and inspected as required. • There shall be dry-break couplings and flotation on fuel hoses. • There shall be an adequate number of appropriately stocked, located and maintained spill kits.	All diesel transfer hoses to have dry break couplings and pressure rating suitable for intended use.	Records confirm presence of dry break of couplings and flotation on fuel hoses.
		PS 9.2.3 To ensure adequate resources are available to allow implementation of SOPEP.	**MC 9.2.3** Records confirm presence of spill kits.
	C 9.3 Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: • Implement a completed PTW and/or JSA for the hydrocarbon bunkering/refuelling operation. • Visually monitor gauges, hoses, fittings and the sea surface during the operation. • Check hoses prior to commencement. • Commence bunkering/refuelling in daylight hours. If the transfer is to continue into darkness, the JSA risk assessment must consider lighting and the ability to determine if a spill has occurred. • Do not transfer hydrocarbons in marginal weather conditions.	**PS 9.3.1** Compliance with Contractor procedures for the management of bunkering/helicopter operations.	**MC 9.3.1** Records demonstrate bunkering/refuelling undertaken in accordance with contractor bunkering procedures.
Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are presented in **Appendix D.**			

6.8.4 Unplanned Discharge: Chemicals and Minor Hydrocarbon Spills (Deck and Subsea Spills)

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.1 – Unplanned Discharge: Chemicals		
Context		
Relevant Activities Vessel Operations – **Section 3.7** ROV Operations – **Section 3.8.3**	**Existing Environment** Marine Regional Characteristics – **Section 4.2**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Accidental discharge of hydrocarbons/ chemicals from project vessels, deck activities and equipment, and from subsea hydraulic leaks			✓			✓		A	E	1	L	LCS GP PJ	Broadly Acceptable	EPO 19

Description of Source of Impact/Risk

Vessel and ROV Operations

Hydrocarbons/chemicals are used during vessel and ROV activities for a variety of purposes within the PAA. Spills may include:

- Chemicals (maintenance and cleaning chemicals). Generally held onboard in low quantities (typically <50 L containers) however the maximum volume of chemical storage could be approximately 500 L. Spills of these chemicals may result from human error or damage to a chemical container during handling. In the event that a spill is not contained on deck or within a bunded area, there would be a release to the marine environment of up to 500 L.
- Hydraulic fluids used in machinery (including cranes, winches, ROVs, subsea pumps and passive heave compensators) and small volumes of fuel. Unplanned discharges are most likely to occur due to failure of hydraulic hoses, minor leaks from process components, or spills during periodic refuelling of hydraulic hoses. Volumes of hydraulic fluids contained in ROV hydraulic hoses to be used can be up to approximately 400 L, while hydraulic fluids contained in hoses of key equipment may be in the order of 2 m^3. Operational experience demonstrates that spills are most likely to originate from ROV hydraulic hoses and have been less than 100 L, with a typical volume of <20 L (based on capacity of hydraulic hose). All equipment is subject to planned maintenance as preventative measures against unplanned spills.

Survey Equipment

Survey vessels will place equipment on the seabed which may contain relatively small volumes of hydraulic fluid, about 5-10 L, depending on the system. The hydraulic fluid enables various mechanical functions to be performed. If a Boomer, Chirp or Sparker system is used, the receiver will consist of individual hydrophone elements located within neutrally buoyant, silicon oil filled tubing. The hydrophone cable has the potential to be punctured, resulting a leakage of fluid.

Detailed Impact Assessment

Assessment of Potential Impacts

Water Quality

Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (<20L) are anticipated, resulting in very short-term impacts to water quality, and limited to the immediate release location.

The open water location and relatively small unplanned volumes of hydrocarbons/chemicals released will result in rapid dilution close to the source of discharge.

Given the occasional nature of unplanned deck and subsea discharges, the small volumes, and the offshore location of the PAA, any changes to water quality are expected to have no lasting effects.

Marine Fauna

As a result of a change in water quality, further impacts to receptors may occur, which include injury or mortality to marine fauna resulting from exposure to toxins in the released chemicals/hydrocarbons. Physical coating of marine fauna and sub-lethal or lethal toxic effects from hydrocarbons/chemicals are considered unlikely given the low volumes of potential discharge, short exposure times and the rapid dilution and dispersion of discharges once entering the marine environment. Impacts to marine fauna are expected to be limited to temporary irritation of sensitive membranes to individuals and are considered negligible.

Summary of Assessment Outcomes

Receptor	*Impact*	*Receptor Sensitivity*	*Risk Consequence*	*Likelihood*	*Risk rating*
Water quality	Change in water quality	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Migratory Shorebirds and Seabirds	Injury/mortality to fauna	High value species	Slight (E)	Highly Unlikely	Low
Fish		High value species	Slight (E)	Highly Unlikely	Low
Marine Mammals		High value species	Slight (E)	Highly Unlikely	Low
Marine Reptiles		High value species	Slight (E)	Highly Unlikely	Low

Overall Risk Consequence: The overall risk consequence/risk rating for an unplanned deck and subsea spills is Low based on no lasting effect to the high value receptors (marine fauna). The risk consequence/risk ratings for water quality is consistent with the levels rated in the Scarborough OPP. Potential impacts to marine fauna have been additionally assessed in this EP. There is no change in risk rating (low); however, the risk consequence is slightly higher due to the higher receptor sensitivity level.

Demonstration of ALARP

Control Considered	*Control Feasibility (F) and Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Control Adopted*
Legislation, Codes and Standards				
Marine Order 91 (Marine pollution prevention – oil) 2014, requires SOPEP/SMPEP (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	By ensuring a SOPEP/SMPEP is in place for the vessel, the likelihood of a spill entering the marine environment is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Controls based on legislative requirements – must be adopted.	Yes **C 7.3**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of procedures for chemical storage and handling on the vessels will reduce the consequence of impacts resulting from unplanned discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability.	Controls based on legislative requirements – must be adopted.	Yes C 10.1
Good Practice				
Spill kits positioned in high risk locations around the vessel (near potential spill points such as transfer stations).	F: Yes. CS: Minimal cost. Standard practice.	Spill kits would reduce the likelihood of a deck spill from entering the marine environment. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes C 10.2
Implementation of waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of all waste generated.	F: Yes. CS: Minimal cost. Standard practice.	Controls outlined in the management plan will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefits outweigh cost sacrifice.	Yes C 10.4
Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals in discharges will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes C 7.4
Relevant machinery (including ROV) to undergo scheduled maintenance.	F: Yes. CS: Minimal cost. Standard practice.	Regular maintenance will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes C 10.5

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
ROV fluid levels to be monitored during use and set with alarms.	F: Yes. CS: Minimal cost. Standard practice.	Monitoring will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes C 10.6
Below-deck storage of all hydrocarbons and chemicals	F: Yes. CS: Minimal cost. Standard practice.	Below-deck storage will reduce the likelihood of a deck spill.	Benefits outweigh cost/sacrifice.	Yes C 10.7
Mitigation: Oil spill response	Refer to **Appendix D.**			
Professional Judgement - Eliminate				
No additional controls identified				
Professional Judgement – Substitute				
No additional controls identified				
Professional Judgement – Engineered Solution				
Below-deck storage of all hydrocarbons and chemicals.	F: Yes. It is feasible to store some level of inventory for hydrocarbons and chemicals below-deck when not in use. CS: Time in double-handling of chemicals / hydrocarbons in moving below-deck and then back to upper deck for use. H&S risks associated with moving and handling chemicals / hydrocarbons.	Storage of chemicals and hydrocarbons below deck where practicable can reduce the likelihood of spills which may escalate overboard.	Benefits outweigh cost/sacrifice.	Yes C 10.7
A reduction in the volumes of chemicals and hydrocarbons stored onboard vessels.	F: Yes. Increases the risks associated with transportation and lifting operations. CS: Project delays if required chemicals not on board. Increases the risks associated with transportation and lifting operations.	No reduction in likelihood or consequence since chemicals will still be required to enable drilling activities to occur.	Disproportionate. The cost/ sacrifice outweighs the benefit gained.	No
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, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned release of chemicals. As no reasonable additional/alternative controls were				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.				

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.1 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:**

- Overall risk consequence for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to an unplanned chemical and minor hydrocarbon spill have been adopted.
- There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.

Acceptability Statement:

The impact assessment has determined that unplanned chemical and minor hydrocarbon spills represents a low current risk rating and is unlikely to result in a risk consequence greater than Slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. 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 adopted controls are considered consistent with industry legislation, codes and standards, good practice and professional judgement and meet the requirements and expectations of Australian Marine Orders identified during impact assessment.

Further opportunities to reduce the impacts have been investigated above. The potential risks and consequences are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned discharge of chemicals/ hydrocarbons to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 19 Undertake the Petroleum Activities Program in a manner that will prevent an unplanned release of chemicals or non-process hydrocarbons to the marine environment resulting in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**C 7.3** **See Section 6.7.7**	**PS 7.3.1** **See Section 6.7.7**	**MC 7.3** **See Section 6.7.7**
	C 10.1 Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	**PS 10.1.1** Failure of primary containment in storage areas does not result in loss to the marine environment.	**MC 10.1.1** Records confirms all liquid chemicals and fuel are stored in bunded/secondarily contained areas when not being handled/moved temporarily.
	C 10.2 Spill kits positioned in high risk locations around the vessel (near potential spill points such as transfer stations).	**PS 10.2.1** Spill kits to be available for use to clean up deck spills.	**MC 10.2.1** Records confirms that spill kits are present, maintained, and suitably stocked.
	C 10.4 Implementation of waste management procedures	**PS 10.4.1** Hazardous and non hazardous waste managed	**MC 10.4.1**

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	which provide for safe handling and transportation, segregation and storage and appropriate classification of all waste generated.	in accordance with the waste management procedure.	Records demonstrate compliance with waste management procedure.
	C 7.4 See **Section 6.7.7**	**PS 7.4.1** See **Section 6.7.7**	**MC 7.4.1** See **Section 6.7.7**
	C 10.5 Relevant machinery (including ROVs, subsea pumps, passive heave compensators) to undergo maintenance.	**PS 10.5.1** Planned maintenance of relevant machinery	**MC 10.5.1** Maintenance records show maintenance of relevant machinery been undertaken.
	C 10.6 ROV fluid levels to be monitored during use and set with alarms.	**PS 10.6.1** ROV fluid levels to be monitored during use.	**MC 10.6.1** Records demonstrate monitoring of ROV fluids was undertaken,
	C 10.7 Below-deck storage of all hydrocarbons and chemicals where practicable.	**PS 10.7** Hydrocarbons and chemicals stored below-deck where practicable.	**MC 10.7.1** Inspections show storage where practicable of hydrocarbons and chemicals below deck.

6.8.5 Unplanned Discharge: Loss of Solid Hazardous and Non-hazardous Wastes/Equipment

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.2 – Unplanned Discharge: Solid Waste		
Context		
Relevant Activities Vessel Operations – **Section 3.7**	**Existing Environment** Marine Regional Characteristics – **Section 4.2**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Accidental loss of hazardous or non-hazardous solid wastes / equipment to the marine environment			✓			✓		A	D	0	L	LCS GP PJ	Broadly Acceptable	EPO 2, 5, 6, 7, 8, 20, 22

Description of Source of Impact/Risk

The vessels will generate a variety of solid wastes, including packaging and domestic wastes such as aluminium cans, bottles, paper and cardboard. Hence, there is the potential for solid wastes to be lost overboard to the marine environment.

Equipment may also be accidentally lost overboard. Equipment that has been recorded as being lost on previous campaigns has primarily been windblown or dropped overboard and has included things such as personal protective equipment and small tools or materials.

These events have occurred during backloading activities, periods of adverse weather and incorrect waste storage.

Detailed Impact Assessment

Assessment of Potential Impacts

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 and changes to aesthetic values. 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 PAA, the types, size and frequency of wastes that could occur, and species present.

Water Quality

Hazardous solid wastes such as paint cans, oily rags, etc., can cause localised contamination of the water through a release of toxins and chemicals. Given likely small volumes of any unplanned solid waste discharge, and the occasional nature of the event, these would result in temporary and highly localised changes to the water quality.

Seabirds and Migratory Shorebirds, Fish, Marine Reptiles and Marine Mammals

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 and the location of the activities at significant distance from sensitive habitats. Significant impacts are unlikely to occur at an individual level and will not occur at a population level, nor result in the decrease of the quality of the habitat such that the extent of these species is likely to decline.

While the threat abatement plan for impacts of marine debris on vertebrate marine life does not list explicit management actions for non-related industries (DEWHA, 2009b), management controls will reduce the risk of unplanned discharge of solid waste.

The temporary or permanent loss of waste materials into the marine environment is not likely to have a significant environmental impact, based on the types, size and frequency of wastes that could occur. The magnitude of potential impact to marine fauna is Slight, which results in a consequence of Minor (D) based on the high receptor sensitivity.

Summary of Assessment Outcomes

Receptor	*Impact*	*Receptor Sensitivity*	*Risk Consequence*	*Likelihood*	*Risk Rating*
Water Quality	Change in water quality	Low value (open water)	Negligible (F)	Remote	Low
Migratory Shorebirds and Seabirds	Injury/mortality to fauna	High value species	Minor (D)	Remote	Low
Fish		High value species	Minor (D)	Remote	Low
Marine Mammals		High value species	Minor (D)	Remote	Low
Marine Reptiles		High value species	Minor (D)	Remote	Low

Overall Risk Consequence: The overall risk rating for unplanned discharge of hazardous and non-hazardous solid waste is Low based on a Minor consequence, to the high value receptors (marine fauna), and a remote likelihood. The risk consequence levels/risk ratings for individual receptors are consistent with the levels rated in the OPP.

Demonstration of ALARP

Control Considered	*Control Feasibility (F) and Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Control Adopted*
Legislation, Codes and Standards				
Marine Order 95 – Pollution prevention – Garbage (as appropriate to vessel class),	F: Yes.	Legislative requirements to be followed reduce the	Controls based on legislative	Yes **C 7.1**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
which requires putrescible waste and food scraps are passed through a macerator so that it is capable of passing through a screen with no opening wider than 25 mm.	CS: Minimal cost. Standard practice.	likelihood of an unplanned release. The consequence is unchanged.	requirements – must be adopted.	
Good Practice				
Marine Order 94 – Packaged harmful substances, which requires: • Vessels carrying harmful substances in packaged form must comply with 2 to 5 of MARPOL Annex III, with respect to stowage requirements. A vessel Master may only wash a substance overboard if: • the physical, chemical and biological properties of the substance have been considered, and • washing overboard is considered the most appropriate manner of disposal, and • the Vessel Master has authorised the washing overboard.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an unplanned release. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes C 11.1
Implementation of waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of all waste generated.	F: Yes. CS: Minimal cost. Standard practice.	Controls will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefit outweighs cost sacrifice.	Yes C 10.4
Vessel ROV, crane or project vessel may be used to attempt recovery of solid wastes /equipment lost overboard. Where safe and practicable for this activity will consider: • risk to personnel to retrieve object • whether the location of the object is in recoverable water depths • object's proximity to subsea infrastructure • ability to recover the object (i.e. nature of object, lifting	F: May not always be possible. Assessed case by case. CS: Potentially significant cost. Standard practice.	Occurs after an unplanned release of solid waste and therefore no change to the likelihood. Since the waste objects may be recovered, a reduction in consequence is possible.	Benefit outweighs cost sacrifice.	Yes C 11.2

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
equipment or, ROV availability and suitable weather). Any material dropped objects / waste that remain in the title will undergo an impact assessment and be added to the inventory.				
Professional Judgement – Eliminate				
No additional controls identified.				
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				

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, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of accidental loss of hazardous or non-hazardous solid wastes / equipment to the marine environment. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.2.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:**

- Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to an unplanned release of hazardous and non-hazardous wastes have been adopted.
- There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.

Acceptability Statement:

The impact assessment has determined that unplanned discharges from a release of solid hazardous and non-hazardous wastes / equipment represents a low current risk rating and is unlikely to result in a risk consequence greater than Minor. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. 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 adopted controls are considered consistent with industry legislation, codes and standards, good practice and professional judgement and meet the requirements of Australian Marine Orders identified during impact assessment.

Further opportunities to reduce the impacts have been investigated above.

Based on an assessment against the defined acceptable levels, the risk from unplanned discharges of solid waste / equipment is considered acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 20 Undertake Petroleum Activities Program in a manner that will prevent an unplanned release of solid waste to the marine environment resulting in a significant impact **EPO 8** Undertake the Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of seabirds or shorebirds, or the spatial distribution of the population. **EPO 5** Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. **EPO 6** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population. **EPO 7** Undertake the Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species. **EPO 2** Undertake the Petroleum Activities Program in a manner that will prevent a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**C 7.1** **See Section 6.7.6**	**PS 7.1.1** **See Section 6.7.6**	**MC 7.1.1** **See Section 6.7.6**
	C 11.1 Marine Order 94 (where relevant to vessel class) – packaged harmful substances, which requires: • vessels carrying harmful substances in packaged form must comply with 2 to 5 of MARPOL Annex III, with respect to stowage requirements a Vessel Master may only wash a substance overboard if: • the physical, chemical and biological properties of the substance have been considered, and • washing overboard is considered the most appropriate manner of disposal, and • the Vessel Master has authorised the washing overboard.	**PS 11.1.1** Compliance with Marine Order 94 (where relevant to vessel class) – packaged harmful substances which provides information about preventing harmful substances carried by regulated Australian vessels, from entering the marine environment.	**MC 11.1.1** Records demonstrate any non-compliance with Marine Orders are documented.
	C 10.4 See **Section 6.8.4**	**PS 10.4.1** See **Section 6.8.4**	**MC 10.4.1** See **Section 6.8.4**
	C 11.2 Vessel ROV, crane or project vessel may be used to attempt recovery of solid wastes /equipment lost overboard. Where safe and practicable for this activity will consider: • risk to personnel to retrieve object • whether the location of the object is in recoverable water depths • object's proximity to subsea infrastructure • ability to recover the object (i.e. nature of object, lifting equipment or, ROV availability and suitable weather).	**PS 11.2.1** Any 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 11.2.1** Records detail the recovery attempt consideration and status of any waste /equipment lost to marine environment. **MC 11.2.2** First Priority records demonstrate outcomes of the safe and practicable evaluation, including an impact assessment for the objects remaining. **MC 11.2.3** Records demonstrate that material items left in title are added to the inventory.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 6 Undertake the Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of fish, or the spatial distribution of the population. **EPO 21** Undertake the Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of marine mammals or the spatial distribution of the population.	Any material dropped objects / waste that remain in the title will undergo an impact assessment and be added to the inventory.		

6.8.6 Physical Presence (Unplanned): Seabed Disturbance

Scarborough OPP – Relevant Impact Assessment Section
OPP Section 7.2.3 – Physical Presence (Unplanned): Seabed Disturbance

Context

Relevant Activities	Existing Environment	Stakeholder consultation
Vessel Operations – **Section 3.7** Subsea Infrastructure Installation – **Section 3.10**	Marine Regional Characteristics – **Section 4.2**	Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	*Environmental Value Potentially Impacted*							*Evaluation*						
	Soil and Groundwater	Marine Sediment	Water Quality	Air Quality (inc. odour)	Ecosystems / Habitat	Species	Socio-economic	Decision Type	Impact/Consequence	Likelihood	Current Risk Rating	ALARP Tools	Acceptability	Outcome
Dropped objects resulting in the disturbance of benthic habitat		✓			✓			A	D	1	M	GP	Broadly Acceptable	EPO 13, 22

Description of Source of Impact/Risk

During project vessel operations, the primary cause for unplanned seabed disturbance is through dropped objects from the project vessels.

There is the potential for objects to be dropped overboard from the project vessels to the marine environment. Objects that have been dropped during previous offshore activities include small numbers of personal protective gear (e.g. glasses, gloves, hard hats), small tools (e.g. spanners) hardware fixtures; however, there is also potential for larger equipment to also be dropped during the activity, particularly during recovery of infrastructure from the seabed. The spatial extent in which dropped objects can occur is restricted to the PPA.

Detailed Impact Assessment

Assessment of Potential Impacts

In the unlikely event of an object being dropped into the marine environment, potential environmental effects would be limited to localised physical impacts on benthic communities. In most cases, objects will be able to be recovered and therefore these impacts will also be temporary in nature. However, there may be instances where objects are unable to be recovered due to health and safety, operational constraints or other factors such as the difficulty of recovering dropped objects at depth. When dropped objects are unable to be recovered, the impact will continue to be localised but would also be long-term.

KEFs

The temporary or permanent loss of dropped objects into the marine environment is likely to result in a localised impact only, as the benthic communities associated with the PAA are of low sensitivity and are broadly represented throughout the NWMR. As described in **Section** 4.7, the Exmouth Plateau KEF overlaps the PAA. Benthic communities in the PAA are representative of the Exmouth Plateau and of deep water soft sediment habitats reported in the wider region (e.g. BHP Billiton, 2004; Woodside, 2005; Woodside, 2006; Brewer et al., 2007; RPS, 2011; Woodside, 2013; Apache, 2013).

Given the nature and scale of risks and consequences from dropped objects, no lasting effect is expected to seabed sensitivities within the PAA. Further, considering the types, size and frequency of dropped objects that could occur, it is unlikely that a dropped object would have a significant impact on any benthic community.

Any unplanned seabed disturbance within the KEF would be highly localised and relatively small compared to the size of the KEF. There will be no substantial adverse effect on the KEF or the communities within it. On this basis, the magnitude of potential impacts to KEFs from unplanned seabed disturbance during activities is Slight. Receptor sensitivity for KEF is high, leading to a Minor (D) risk consequence.

Epifauna and Infauna

As a result of a change in water quality and change in habitat, injury or mortality to marine fauna resulting from an increase in turbidity may occur. Given a change to water quality is unlikely, the only receptors that would potentially be at risk of unplanned seabed disturbance are bottom dwelling species including epifauna and infauna. Benthic communities, including epifauna and infauna may be impacted by the dropped objects on the seabed. If not recovered, dropped objects may result in the permanent loss of a small area under the object.

Given generally sparse benthic communities in the PAA, no threatened or migratory species or ecological communities were identified, and those epifauna and infauna communities observed are likely to be well represented elsewhere in the region, impacts are expected to be restricted to a localised proportion of epifauna and infauna communities.

Based on the detailed evaluation, the magnitude of potential impacts to epifauna and infauna from unplanned seabed disturbance during activities associated with Scarborough is evaluated to be slight. Sensitivity for epifauna and infauna is low, leading to a Negligible (F) risk consequence.

Summary of Assessment Outcomes

Receptor	*Impact*	*Receptor sensitivity*	*Risk Consequence*	*Likelihood*	*Risk Rating*
Epifauna and infauna	Change in habitat Injury/ mortality to fauna	Low value	Negligible (F)	Highly Unlikely	Low
KEFs	Change in habitat	High Value	Minor (D)	Highly Unlikely	Moderate

Overall Risk Consequence: The overall risk rating for disturbance to benthic habitat from unplanned seabed disturbance is Moderate based on minor consequence to the high value receptor (KEFs) and a highly unlikely likelihood. The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the OPP.

Demonstration of ALARP

Control Considered	*Control Feasibility (F) and Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Control Adopted*
Legislation, Codes and Standards				
No additional controls identified.				
Good Practice				
Installation vessel work procedures for lifts, bulk transfers and cargo loading, which require: • The security of loads shall be checked prior to commencing lifts. • Loads shall be covered if there is a risk of loss of loose materials. • Lifting operations shall be conducted using the PTW and JSA systems to manage the specific risks of that lift, including	F: Yes. CS: Minimal cost. Standard practice.	Installation vessel work procedures for lifts, bulk transfers and cargo loading will reduce the risk of dropped objects.	Benefits outweigh cost/sacrifice.	Yes **C 12.1**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
consideration of weather and sea state.				
Subsea lifts of equipment (excluding concrete pads) will occur overboard in deployment zone and stepped into location, in accordance with dropped object assessment.	F: Yes. CS: Minimal cost. Standard practice.	Lifting within designated deployment zone will reduce the risk of dropped objects in proximity to existing subsea infrastructure that could potentially cause damage/leaks.	Benefits outweigh cost/sacrifice.	Yes C 12.2
Installation vessel inductions include control measures for dropped object prevention.	F: Yes. CS: Minimal cost. Standard practice.	By ensuring crew are appropriately trained in dropped object prevention, the likelihood of a dropped object event is reduced. No change in consequence will occur.	Benefits outweigh cost/sacrifice.	Yes C 12.3
Vessel ROV, crane or project vessel may be used to attempt recovery of solid wastes /equipment lost overboard. Where safe and practicable for this activity will consider: • risk to personnel to retrieve object • whether the location of the object is in recoverable water depths • object's proximity to subsea infrastructure • ability to recover the object (i.e. nature of object, lifting equipment or, ROV availability and suitable weather). Any material dropped objects / waste that remain in the title will undergo an impact assessment and be added to the inventory.	F: May not always be possible. Assessed case by case. CS: Potentially significant cost. Standard practice.	Occurs after a dropped object event; therefore, no change to the likelihood. Since the object may be recovered, a reduction in consequence is possible.	Benefit outweighs cost sacrifice.	Yes **C 11.2**
Infrastructure will be placed on the seabed within the design footprint using positioning technology	F: Yes. This is a standard practice and benefits project requirements aiding placement as per design requirements.	Positioning infrastructure within the design footprint will reduce the potential magnitude of impact.	Benefits outweigh cost/sacrifice.	Yes C 1.2

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	CS: Costs associated with improved accuracy/tolerance for implementation			
Professional Judgement – Eliminate				
No additional controls identified.				
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
Risk Based Analysis				
No additional controls identified.				
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, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of unplanned seabed disturbance. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.				
Demonstration of Acceptability				
Acceptability Criteria and Assessment				
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.3.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (Section **2.3.5**): • Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to an unplanned seabed disturbance have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.				
Acceptability Statement: The impact assessment has determined that disturbance to seabed from dropped objects represents a moderate current risk rating and is unlikely to result in a risk consequence greater than Minor. The adopted controls are considered industry good practice. The potential risks and consequences are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of seabed disturbance from dropped objects / anchor drag to an acceptable level.				

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 13 Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area	**C 12.1** The installation vessel work procedures for lifts, bulk transfers and cargo loading, which require:	**PS 12.1.1** All lifts conducted in accordance with applicable installation vessel work procedures to limit potential for dropped objects.	**MC 12.1.1** Records show lifts conducted in accordance with the applicable installation vessel work procedures.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a KEF. **EPO 22** Undertake the Petroleum Activities Program in a manner which prevents unplanned seabed disturbance.	• the security of loads shall be checked prior to commencing lifts • loads shall be covered if there is a risk of loss of loose materials. • Lifting operations shall be conducted using the PTW and JSA systems to manage the specific risks of that lift, including consideration of weather and sea state.		
	C 12.2 Subsea lifts of equipment (excluding concrete pads) will occur overboard in deployment zone and stepped into location, in accordance with dropped object assessment.	**PS 12.2.1** Subsea lifts of equipment (excluding concrete pads) occur overboard in deployment zone and stepped into location.	**MC 12.2.1** Records demonstrate that subsea lifts of equipment (excluding concrete pads) have occurred in the deployment zone and stepped into location.
	C 12.3 Installation vessel inductions include control measures for dropped object prevention.	**PS 12.3.1** To ensure awareness of requirements for dropped object prevention.	**MC 12.3.1** Records show dropped object awareness training is provided to the installation vessel.
	C 11.2 See **Section 6.8.5**	**PS 11.2.1** See **Section 6.8.5**.	**MC 11.2.1** See **Section 6.8.5**
	C 1.2 See **Section 6.7.1**	**PS 1.2.1** See **Section 6.7.1**	**MC 1.2.1** See **Section 6.7.1**

6.8.7 Physical Presence (Unplanned): Accidental Introduction and Establishment of Invasive Marine Species

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.4 – Physical Presence (Unplanned): IMS		
Context		
Relevant Activities Installation of Subsea Infrastructure – **Section 3.10** Vessel Operations – **Section 3.7**	**Existing Environment** Marine Regional Characteristics – **Section 4.2**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Introduction and establishment of invasive marine species (IMS) within the PAA.					✓	✓	✓	A	E	0	L	LCS	Broadly Acceptable	EPO 13, 23

Description of Source of Impact/Risk

Vessel Operations

During the Petroleum Activities Program, vessels will be transiting to and from the PAA, potentially including traffic mobilising from beyond Australian waters. Project vessels include installation and construction vessels and other general support vessels **(Section 3.7**).

All vessels are subject to some level of marine fouling whereby organisms attach to the vessel hull. This could particularly occur in areas where organisms can find a good attachment surface (e.g. seams, strainers and unpainted surfaces) or where turbulence is lowest (e.g. niches, sea chests, etc.), although commercial vessels typically maintain anti-fouling coatings to reduce the build-up of fouling organisms.

IMS could be present as biofouling on immersible equipment (survey equipment, ROV etc.) and could be translocated to the PAA and transferred directly to the seafloor or subsea structures where they could establish. Organisms can also be drawn into ballast tanks during onboarding of ballast water as cargo is loaded or to balance vessels under load.

During the Petroleum Activities Program, project vessels have the potential to introduce IMS to the PAA through marine fouling (containing IMS) on vessels, as well as within high risk ballast water discharge. Cross contamination between vessels can also occur (e.g. IMS translocated between project vessels) during times when vessels need to be alongside each other.

Detailed Impact Assessment

Assessment of Potential Impacts

IMS are a subset of Non-indigenous Marine Species (NIMS) that have been introduced into a region beyond their natural biogeographic range resulting in impacts to social/cultural, human health, economic and/or environmental values. NIMS are species that have the ability to survive, reproduce and establish founder populations. However, not all NIMS introduced into an area will thrive or cause demonstrable impacts; the majority of NIMS around the world are relatively benign and few have spread widely beyond sheltered ports and harbours. NIMS are only considered IMS when they result in impacts to environmental values and/or have social/cultural, economic and/or human health impacts.

Once introduced, IMS may prey on local species (which had previously not been subject to this kind of predation and therefore not have evolved protective measures against the attack), they may outcompete indigenous species for food, space or light and can also interbreed with local species, creating hybrids such that the endemic species is lost. These changes to the local marine environment result in changes to the natural ecosystem.

IMS have also proven economically damaging to areas where they have been introduced and established. Such impacts include direct damage to assets (fouling of vessel hulls and infrastructure) and depletion of commercially harvested marine life (e.g. shellfish stocks). IMS have proven particularly difficult to eradicate from areas once established. If the introduction is detected early, eradication may be effective but is likely to be expensive, disruptive and, depending on the method of eradication, harmful to other local marine life.

Potential IMS have historically been introduced and translocated around Australia by a variety of natural and human means, including marine fouling and ballast water. Potential IMS vary from one region to another depending on various environmental factors such as water temperature, salinity, nutrient levels and habitat type, which dictate their survival and invasive capabilities. IMS typically require hard substrate in the photic zone; therefore, requiring shallow waters to become established. Highly-disturbed, shallow-water environments such as shallow coastal waters, ports and marinas are more susceptible to IMS colonisation, whereas IMS are generally unable to successfully establish in deep-water ecosystems and open-water environments where the rate of dilution and the degree of dispersal are high (Williamson and Fitter, 1996; Paulay et al., 2002; Geiling, 2014).

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.

Benthic productivity on the outer continental shelf and slope is low, and is a function of water depth, low nutrient availability, and the absence of hard substrates. Studies completed within the region indicate that benthic composition in deep-water habitats is generally lower in abundance than shallow water habitats of the region (DEWHA, 2008a; Brewer et al., 2007). The seafloor in the PAA is characterised by sparse marine life dominated by motile organisms (ERM, 2013). Such motile organisms included shrimp, sea cucumbers, demersal fish and small, burrowing worms and crustaceans. This soft bottom habitat is also supporting patchy distributions of mobile epibenthos, such as sea cucumbers, ophiuroids, echinoderms, polychaetes and sea-pens (DEWHA, 2008a). The dominant types of epifauna were arthropods and echinoderms (especially shrimp and sea cucumbers, respectively), while the dominant infauna groups were crustaceans and polychaetes (ERM, 2013). Benthic communities in the PAA are representative of the Exmouth Plateau and of deep-water soft sediment habitats reported in the region.

While project vessels have the potential to introduce IMS into the PAA, the deep offshore open waters of the PAA (approximately 900–1000 m) are not conducive to the settlement and establishment of IMS. Furthermore, the PAA are away from shorelines and/or critical habitat. The likelihood of IMS being introduced and establishing viable populations within the PAA or immediate surrounds is considered not credible.

Accordingly, impact to epifauna/infauna in the PAA is not considered credible. Receptor sensitivity for epifauna and infauna is low, leading to a Negligible (F) risk consequence.

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, project activities will not result in establishment of IMS, and as such not adversely affect other marine user activities in the region.

Based on the detailed impact evaluation, the magnitude of potential impacts of a change to the functions, interests or activities of other users is slight (see Table 6-18). 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

In support of Woodside's assessment of the risks and consequences of IMS introduction associated with the Petroleum Activities Program, Woodside conducted a risk and impact evaluation of the different aspects of a marine pest translocation. The results of this assessment are presented in Table 6-18.

As a result of this assessment, Woodside has presented the highest potential consequence as a Slight (E) and likelihood as Remote (0), resulting in an overall Low risk following the implementation of identified controls.

Table 6-18: Credibility, consequence and likelihood of introducing IMS

IMS Introduction Location	Credibility of Introduction	Consequence of Introduction	Likelihood
Introduced to PAA and establishment on the seafloor or subsea structures	Not Credible The deep offshore open waters of the PPA, away from shorelines and/or critical habitat, more than 50 km from a shoreline and in waters more than 100 m deep are not conducive to the settlement and establishment of IMS.		
Introduced to PAA and establishment on a project vessel.	Credible There is potential for the transfer of marine pests between project vessels within the PAA.	Environment – Not Credible The translocation of IMS from a colonised project vessel to shallower environments via natural dispersion is not considered credible given the distances of the PAA from nearshore environments (i.e. greater than 12 nm/50 m water depth). There is therefore no credible environmental risk and the assessment is limited to Woodside's reputation. Reputation – E If IMS were to establish on a project vessel this could potentially impact the vessel operationally through the fouling of intakes, result in translocation of an IMS into the PAA and, depending on the species, potentially transfer of an IMS to other project vessels, which would likely result in the quarantine of the vessel until eradication could occur (through cleaning and treatment of infected areas), which would be costly to perform. Such introduction would be expected to have slight impact to Woodside's reputation, particularly with Woodside's contractors, and would likely have a reputational impact on future proposals.	Remote (0) Interactions between project vessel will be limited during the Petroleum Activities Program, with interactions limited short periods of time alongside (i.e. during backloading, bunkering activities). There is also no direct contact (i.e. they are not tied up alongside) during these activities. Spread of marine pests via ballast water or spawning in these open ocean environments is also considered remote.
Transfer between project vessels and from project vessels to other marine environments beyond the PAA.	Not Credible This risk is considered so remote that it is not credible for the purposes of the activity. The transfer of a marine pest between project vessels was already considered remote, given the offshore open ocean environment (i.e. transfer pathway discussed above).		

Detailed Impact Assessment	
	For a marine pest to then establish into a mature spawning population on the new project vessel (which would have been through Woodside's IMS process) and then transfer to another environment is not considered credible (i.e. beyond the Woodside risk matrix). Project vessels will be located in an offshore, open ocean, deep environment, where IMS survival is implausible. Furthermore, this marine pest once transferred would need to survive on a new vessel with good vessel hygiene (i.e. has been through Woodside's risk assessment process) and survive the transport back from the PAA to shore. In the event it was to survive this trip, it would then need to establish a viable population in nearshore waters.

Summary of Assessment Outcomes

Receptor	*Impact*	*Receptor Sensitivity*	*Risk Consequence*	*Likelihood*	*Risk Rating*
Epifauna and infauna	Change in ecosystem dynamics	Low value habitat (homogenous)	Negligible (F)	Remote	Low
Industry, Shipping, Defence	Changes to the functions, interests or activities of other users	Medium value	Slight (E)	Remote	Low

Overall Risk Consequence: The overall risk rating for the accidental introduction of IMS is Low given the remote offshore location of the PAA. The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the OPP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Project vessels including foreign vessels not party to the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 (BWM Convention) will manage their ballast water using one of the approved ballast water management options, as specified in the Australian Ballast Water Management Requirements. This applies to all project vessels that will enter the Operational Area, including those carrying out activities outside of Australian Territorial Seas (>12nm).	F: Yes. CS: Minimal cost. Standard practice.	The use of an approved ballast water treatment system will reduce the likelihood of transfer of marine pests between project 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 13.1
Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the	F: Yes. CS: Standard practice.	Reduces the likelihood of transfer of marine pests between vessels	Controls based on legislative requirements under the *Biosecurity Act*	Yes **C 13.2**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Australian Biofouling Management Requirements.		within the Operational Area. No change in consequence would occur.	*2015* – must be adopted.	
Good Practice				
Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment that enter the Operational Area, unless exempt (Section 7.2.2). Based on the outcomes of each IMS risk assessment, management options commensurate with the risk 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 13.3
Professional Judgement - Eliminate				
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
Eliminate use of vessels.	F: No. Given that vessels must be used to implement project, there is no feasible means to eliminate the source of risk. CS: Loss of the project.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement - Substitute				
Source project vessels based in Australia only.	F: Potentially. Limiting activities to only use local project vessels could potentially pose a significant	Sourcing vessels from within Australian will reduce the likelihood of IMS from outside Australian waters, however, it	Disproportionate. Sourcing vessels from Australian waters may result in a reduction in the likelihood of IMS	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	risk in terms of time and duration of sourcing a vessel, as well as the ability of the local vessels to perform the required tasks. For example, there are limited installation vessels based in Australian waters. While the project will attempt to source project vessels locally it is not always possible. Availability cannot always be guaranteed when considered competing Oil and Gas activities in the region. In addition, sourcing Australian based vessels only will cause increases in cost due to pressures of vessel availability. CS: Significant cost and schedule impacts due to restrictions of vessel hire opportunities.	does not reduce the likelihood of introduction of species native to Australia but alien to the PAA and NWMR, or of IMS that have established elsewhere in Australia. The consequence is unchanged.	introduction to the PAA; 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.	
IMS inspection of all vessels.	F: Yes. Approach to inspect vessels could be a feasible option. CS: Significant cost and schedule impacts. In addition, Woodside's IMS risk assessment process (C 13.2) is seen to be more cost effective as this control allows Woodside to manage the introduction of marine pests through biofouling, while targeting its efforts to and	Inspection of all vessels for IMS would reduce the likelihood of IMS being introduced to the PAA. However, this reduction is unlikely to be significant given the other control measures implemented. No change in consequence would occur.	Disproportionate. The cost/sacrifice outweighs the benefit gained, as other controls to be implement achieve an ALARP position.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	resources to areas of greatest concern.			
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 risks and consequences of IMS introduction. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.4.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (Section **2.3.5**):

- Overall risk consequence for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to an unplanned introduction of IMS have been adopted.
- There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.

Acceptability Statement:

The impact assessment has determined that the accidental introduction and establishment of IMS represents a low current risk rating and is unlikely to result in a risk consequence greater than Slight. The adopted controls are considered consistent with industry legislation, codes and standards. Further opportunities to reduce the impacts have been investigated above

The potential risks and consequences are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of invasive marine species to an acceptable level.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 13 Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a KEF. **EPO 23** Undertake the Petroleum Activities Program in a manner which prevents a known or potential pest	**C 13.1** Project vessels including foreign vessels not party to the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 (BWM Convention) will manage their ballast water using one of the approved ballast water management options, as specified in the Australian Ballast Water Management Requirements. This applies to all project vessels that will enter the	**PS 13.1.1** Prevent the translocation of IMS within the vessel's ballast water from high risk locations to the Operational Area.	**MC 13.1.1** Ballast Water Records System maintained by vessels which verifies compliance against Australian Ballast Water Management Requirements.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
species (IMS) becoming established.	Operational Area, including those carrying out activities outside of Australian Territorial Seas (>12nm).		
	C 13.2 Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	**PS 13.2.1** Compliance with Australian Biofouling Management Requirements.	**MC 13.2.1** Records of implementation of biofouling management measures and pre-arrival reporting
	C 13.3 Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment that enter the Operational Area, unless exempt (**Section 7.2.2**). Based on the outcomes, management options commensurate with the risk will be implemented to minimise the likelihood of IMS being introduced.	**PS 13.3.1** Before entering the Operational Area, project vessels and relevant immersible equipment are determined to be low risk of introducing IMS of concern.	**MC 13.3.1** Records of IMS risk assessments maintained for all project vessels and relevant immersible equipment entering the Operational Area to undertake the Petroleum Activities Program.
		PS 13.3.2 In accordance with Woodside's IMS risk assessment process, the IMS risk assessments will be undertaken by an authorised environment adviser who has completed relevant Woodside IMS training or by qualified and experienced IMS inspector.	**MC 13.3.2** Records confirm that the IMS risk assessments undertaken by an Environment Adviser or IMS inspector (as relevant).

6.8.8 Physical Presence (Unplanned): Vessel Collision with Marine Fauna

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.2.5 – Physical Presence (Unplanned): Collision with Marine Fauna		
Context		
Relevant Activities Vessel Operations – **Section 3.7**	**Existing Environment** Protected species – **Section 4.6**	**Stakeholder consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Accidental collision between project vessels and protected marine fauna						✓		A	E	1	L	LCS GP PJ	Broadly Acceptable	EPO 24

Description of Source of Impact/Risk

Activities associated with the Petroleum Activities Program will require vessels for subsea installation, support operations and supply/transport. The type and number of vessels in the PAA at any one time, and the duration of presence, will differ depending on the activities being undertaken. Vessels operating within the PAA may present a potential hazard to marine mammals and other protected marine fauna such as marine reptiles and fish. Vessel movements can result in collisions between the vessel (hull and propellers) and marine fauna, potentially resulting in superficial or serious injury that may affect life functions (e.g. movement and reproduction) or cause mortality.

The factors that contribute to the frequency and severity of impacts due to collisions vary greatly due to vessel type, vessel operation (specific activity, speed), physical environment (e.g. water depth), the type of marine fauna present and their behaviours.

Several vessel types will be required to complete the activities associated with the Petroleum Activities Program, including larger vessels associated with installation, and smaller support vessels (refer to Section 3.7). Such vessel-based activities will be separated spatially and temporally.

Detailed Impact Assessment

Assessment of Potential Impacts

Project vessels operating in and around the PAA may present a potential hazard to marine mammals and other protected marine fauna, such as marine turtles. Vessel movements can result in collisions between the vessel (hull and propellers) and marine fauna, potentially resulting in superficial injury, serious injury that may affect life functions (e.g. movement and reproduction), or mortality. Marine fauna are also at risk of mortality through being caught in thrusters during station keeping operations (dynamic positioning).

The likelihood of vessel/fauna collision being lethal is influenced by vessel speed—the greater the speed at impact, the greater the risk of mortality (Jensen and Silber, 2004; Laist et al., 2001). Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots. Project vessels within the PAA are likely to be travelling <8 knots (and will often be stationary), unless operating in an emergency. At times, vessels will be transiting between wells where speed could be up to a

maximum of about 15 knots, however these would only be transitory through the area. Therefore, the chance of a vessel collision with protected species resulting in a lethal outcome is considered highly unlikely.

The risk of marine life getting caught in operating thrusters is highly unlikely, given the low presence of individuals, combined with the avoidance behaviour commonly displayed during dynamic positioning operations.

Marine Mammals

As described above, vessel speed influences the probability of a vessel collision with a cetacean and also whether a collision may result in lethal injury (Vanderlaan and Taggart, 2007). Additionally, behaviour of individuals may also influence the likelihood of a collision occurring. Although large cetaceans are expected to show localised avoidance in response to vessel noise, studies have reported limited behavioural response to approaching ships (McKenna et al., 2015) and individuals engaging in behaviours such as feeding, mating or nursing may be less aware of their surroundings and more susceptible to collision (Laist et al., 2001).

No known key aggregation areas for marine mammals (resting, breeding or feeding) are located within or immediately adjacent to the PAA. However, individuals may occasionally be present in the PAA, including pygmy blue whales during seasonal migrations (Section 4.6.5). Pygmy blue whale may occasionally transit through the PAA as individuals and/or small groups during the northbound (April to July) and southbound (October to January) migratory seasons. However, the migration BIA is about 35 km to the west of the PAA and the likelihood of encountering pygmy blue whales is low. The Conservation Management Plan for the Blue Whale identifies vessel disturbance and strike as a threat to the EPBC listed species (Commonwealth of Australia, 2015a; TSSC, 2015b).

According to the data of Vanderlaan and Taggart (2007), it is estimated that the risk of lethal injury to a large whale as a result of a vessel strike is less than 10% at a speed of 4 knots. Vessel-whale collisions at this speed are uncommon and, based on reported data contained in the NOAA database (Jensen and Silber, 2004) there are only two known instances of collisions when the vessel was travelling at less than 6 knots; both of these were from whale-watching vessels that were deliberately positioned amongst whales

Smaller cetaceans, such as dolphins, comprise a lower proportion of vessel collision records (DoEE, 2016), though it is difficult to determine if this is due to a lower collision rate or lower detection rate of incidents. Dolphins often engage in bow riding which may make them more vulnerable to entanglement with propellers or thrusters compared to larger cetaceans.

Marine Reptiles

The Recovery Plan for Marine Turtles in Australia recognises turtles are at risk from vessel strikes, particularly in shallow coastal foraging habitats and internesting areas where there are high numbers of recreational and commercial vessels (Commonwealth of Australia, 2017). Considering the offshore location, it is expected that the presence of marine turtles would be very unlikely and only comprise individuals transiting the open, offshore waters for short periods of time. It is expected that individuals will respond to vessel presence by avoiding the immediate vicinity of the vessels and, combined with low vessel speed, will reduce the likelihood of a vessel-turtle collision.

It is highly unlikely that vessel movement associated with the Petroleum Activities Program will have a significant impact on marine fauna populations, given the low presence of transiting individuals and the low operating speed of the support vessels (generally <8 knots or stationary, unless operating in an emergency).

Marine Fauna Summary

Potential impacts from collision with marine fauna will not result in a substantial adverse effect on a population or the spatial distribution of the population. Additionally, no adverse impact on marine ecosystem functioning or integrity or impacts to lifecycles of the population of migratory whales will occur.

Cumulative Impacts

There is potential for some cumulative impacts to marine fauna to occur as a result of overlap with the Scarborough D&C Petroleum Activities Program and SI&TI Petroleum Activities Program. Given the offshore waters and deep water depths (approximately 900-1000 m), interaction with marine fauna is likely to be limited to individuals and/or small groups of transient cetaceans, with potential impacts expected to result in a behavioural disturbance, i.e. avoidance of the project vessels, with no lasting effect.

Summary of Assessment Outcomes

Receptor	*Impact*	*Receptor Sensitivity*	*Risk Consequence*	*Likelihood*	*Risk Rating*
Marine Mammals	Injury to/ mortality of fauna	High value species	Slight (E)	Highly Unlikely	Low
Marine Reptiles	Injury to/ mortality of fauna	High value species	Slight (E)	Highly Unlikely	Low

Overall Risk Consequence: The overall risk rating is Low based on slight consequence, to the high value receptors (marine mammals and reptiles) and a highly unlikely likelihood. The risk rating/risk consequence for individual receptors are consistent with the levels rated in the OPP.

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[19]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around cetaceans can potentially reduce the underwater noise footprint of a vessel and lower the likelihood of interaction above significant thresholds	Controls based on legislative requirements – must be adopted.	Yes **C 3.1**
Good Practice				
Project vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks will reduce the likelihood of a collision occurring. The consequence of a collision is unchanged.	Legislative control for State waters, Whale Shark Interaction Protocol, being adopted for the Petroleum Activities Program.	Yes **C 3.2**

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

Demonstration of ALARP				
Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks will reduce the likelihood of a collision occurring.	Benefits outweigh cost / sacrifice. Good Practice.	Yes **C 3.3**
Variation of the timing of the Petroleum Activities Program to avoid whale migration periods.	F: No. Timing of activities is linked to Vessel schedule. Timing of all activities is currently not determined, and due to Vessel availability and operational requirements, undertaking activities during migration seasons may not be able to be avoided. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Eliminate				
No additional controls identified.				
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
The use of dedicated MFOs on project vessels for the duration of each activity to watch for whales and provide direction on and monitor compliance with Part 8 of the EPBC Regulations.	F: Yes. However, vessel bridge crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions on the requirements of vessel and whale interactions, and crew undertake specific cetacean observation training. CS: Additional cost of MFOs	Given that project vessel bridge crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions, additional MFOs would not significantly further reduce the risk.	Disproportionate. The cost/sacrifice outweighs the benefit gained.	No
Manage vessel speed to reduce likelihood of interaction with marine fauna	F: Yes. CS: Good practice	There is an established relationship between the likelihood of vessel strikes to whales and the speed	Given the slow speeds at which vessels operate, the likely presence of marine fauna in	o

Demonstration of ALARP				
		of the vessel. However, the PAA does not overlap with any cetacean BIAs or critical habitat and the presence of marine fauna is likely to be limited to infrequent occurrences of individuals or small groups. Therefore, there is no further risk reduction from the application of this control.	the PAA and the controls currently in place (C 3.1) the adoption of this control offers no further reduction in risk.	

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, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of potential vessel collision with protected marine fauna. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.5.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (Section **2.3.5**): • Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to the risk of vessel collision with marine fauna have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during stakeholder consultation.
Acceptability Statement: The impact assessment has determined that, given the adopted controls, a vessel collision with marine fauna represents a low current risk rating that is unlikely to result in a risk consequence to marine fauna greater than Slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. 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 (**Section 6.9**). The adopted controls are considered consistent with industry good practice and professional judgement and meet the requirements of Part 8 (Division 8.1) of the EPBC Regulations 2000. The potential risks and consequences are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of vessel collision with marine fauna to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 24 Undertake the Petroleum Activities Program in a	**C 3.1** See **Section 6.7.3**	**PS 3.1** See **Section 6.7.3**	**MC 3.1.1** See **Section 6.7.3**
	C 3.2	**PS 3.2**	**MC 3.2.1**

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
manner which prevents a vessel strike with protected marine fauna during project activities.	See **Section 6.7.3**	See **Section 6.7.3**	See **Section 6.7.3**
	C 3.3 See **Section 6.7.3**	**PS 3.3** See **Section 6.7.3**	**MC 3.3.1** See **Section 6.7.3**

6.9 EPBC Act Assessment

6.9.1 Principles of ESD

For all impacts and risks assessed in **Section 6** an assessment was conducted to determine if the Petroleum Activities Program was consistent with relevant principles of ESD, as described in **Section 2.4.1**.

This assessment determined that the activity is consistent with principles of ESD a), b), c) and d). Principle e) ('improved valuation, pricing and incentive mechanisms should be promoted') is not relevant to the activity.

6.9.2 MNES Significant Impact Guidelines

As part of the evaluation of potential impacts and risks from planned and unplanned activities ((**Section 6.7, and 6.8**) an assessment was undertaken to determine if any relevant significant impact criteria for EPBC Act listed Endangered or Vulnerable species were met.

The activity will not result in any population level effects on any populations of listed Endangered or Vulnerable species, nor will it "modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline". Therefore, the Petroleum Activities Program will not have a significant impact on any MNES.

6.10 Recovery Plan and Threat Abatement Plan Assessment

As described in **Section 1.10.2.2**, an EP must not be inconsistent with a recovery plan or threat abatement plan for a listed threatened species or ecological community. 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 - A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999 2015-2025 (Commonwealth of Australia, 2015a).
- Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans 2018 (DoEE, 2018).

Table 6-19 lists the objectives and (where relevant) the action areas of these plans, and also describes whether these objectives/action areas are applicable to government, the Titleholder and/or the Petroleum Activities Program. For those objectives/action areas applicable to the Petroleum Activities Program, the relevant actions of each plan have been identified, and an evaluation has been conducted as to whether impacts and risks resulting from the activity are clearly inconsistent with that action or not. The results of this assessment against relevant actions are presented in **Table 6-20** to **Table 6-22.**

The assessment of potential impacts and risks to pygmy blue whales from underwater noise emissions in **Section 6.7.3** has taken into account the definitions of terminology in the CMP, as described in the DAWE and NOPSEMA guidance released in September 2021. Similarly, the assessment against relevant actions in the CMP in **Table 6-20** has been undertaken in the context of the definitions included in the guidance note.

Table 6-19: Identification of applicability of recovery plan and threat abatement plan objectives and action areas

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***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. Adaptively manage turtle stocks to reduce risk and build resilience to climate change and variability	Y		
A3. Reduce the impacts of marine debris	Y	Y	Y
A4. Minimise chemical and terrestrial discharge	Y	Y	Y
A5. Address international take within and outside Australia's jurisdiction	Y		
A6. Reduce impacts from terrestrial predation	Y		
A7. Reduce international and domestic fisheries bycatch	Y		
A8. Minimise light pollution	Y	Y	Y
A9. Address the impacts of coastal development/infrastructure and dredging and trawling	Y	Y	
A10. Maintain and improve sustainable Indigenous management of marine turtles	Y		
B. Enabling and measuring recovery			
B1. Determine trends in index beaches	Y	Y	Y
B2. Understand population demographics at key foraging grounds	Y		
B3. Address information gaps to better facilitate the recovery of marine turtle stocks	Y	Y	Y
Blue Whale Conservation Management Plan			
Long-term recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so	Y	Y	Y

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
that they can be removed from the EPBC Act threatened species list			
Interim Recovery Objectives			
The conservation status of blue whale populations is assessed using efficient and robust methodology	Y		
The spatial and temporal distribution, identification of biologically important areas, and population structure of blue whales in Australian waters is described	Y	Y	Y
Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
Action Areas			
A. Assessing and addressing threats			
A.1: Maintain and improve existing legal and management protection	Y		
A.2: Assessing and addressing anthropogenic noise	Y	Y	Y
A.3: Understanding impacts of climate variability and change	Y		
A.4: Minimising vessel collisions	Y	Y	Y
B. Enabling and Measuring Recovery			
B.1: Measuring and monitoring population recovery	Y		
B.2: Investigating population structure	Y		
B.3: Describing spatial and temporal distribution and defining biologically important habitat	Y	Y	Y
Marine Debris Threat Abatement Plan			
Objectives			
Contribute to long-term prevention of the incidence of marine debris	Y	Y	
Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations	Y	Y	Y
Remove existing marine debris	Y		
Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris	Y		
Increase public understanding of the causes and impacts of harmful marine debris, including microplastic and hazardous chemical contaminants, to bring about behaviour change	Y		

Table 6-20: 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 and H-WA – no relevant actions	Refer Section 6.8.5 Not inconsistent assessment: The assessment of accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to marine turtles.	EPO 2, 5, 6, 7, 8, 19, 20 C 7.1, 11.1, 10.4, 11.2 EPS 7.1.1, 11.1.1, 10.4.1, 11.2.1
	Action Area A4: Minimise chemical and terrestrial discharge	Action: Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs Priority actions at stock level: G-NWS – ensure that spill risk strategies and response programs include management for turtles and their habitats LH-WA, F-Pil – ensure that spill risk strategies and response programs include management for turtles and their habitats, particularly in reference to slow to recover habitats, e.g. seagrass meadows or corals H-WA – no relevant actions	Refer Sections 6.8.2, 6.8.4. Not inconsistent assessment: The assessment of accidental release of chemicals / hydrocarbons has considered the potential risks to marine turtles. Spill risk strategies and response program include management measures for turtles and their nesting habitats.	Refer Section 7.9. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are presented in Appendix D.

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
		Action: Routine discharges from project vessels are managed such that marine turtles are not adversely affected by changes in water quality. Priority actions at stock level: G-NWS – as above LH-WA, F-Pil – as above H-WA – no relevant actions	Refer Sections 6.7.6 and 6.7.7 Not inconsistent assessment: The assessment of routine discharges of chemicals, deck drainage, treated sewerage, putrescible wastes and grey water has considered the potential risks to marine turtles. Individuals transiting the localised area may come into contact with routine discharges, however these are sporadic and in small quantities, and are unlikely to pose a significant risk.	EPO 11 C 6.1, 6.2, 7.1, 7.2, 7.3, 7.4 EPS 6.1.1, 6.2.1, 7.1.1, 7.2.1, 7.3.1, 7.4.1
	Action Area A8: Minimise light pollution	Action: Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats Priority actions at stock level: G-NWS – as above LH-WA – no relevant actions F-Pil and H-WA – manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging/dispersing hatchlings can continue	Refer Section 6.7.4 Not inconsistent assessment: The assessment of light emissions has considered the potential impacts to marine turtles. Internesting, mating, foraging or migrating turtles are not impacted by light from offshore vessels. Vessel light emissions could cause localised and temporary behavioural disturbance to isolated transient individuals, which is unlikely to result in displacement of adult turtles from internesting or nesting habitat critical to the survival of marine turtles.	EPO 1, 5, 6, 7 C 4.1 EPS 4.1.1

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 and H-WA – no relevant actions	Not inconsistent assessment: Woodside contributes to Action Area B1 via its support of the Ningaloo Turtle Program[20]. Given the offshore location of the PAA, impacts to turtle nesting beaches will not occur.	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, F-Pil – no relevant actions H-WA – investigate mixed stock genetics at foraging grounds	Refer Section 6.7.3 Not inconsistent assessment: The assessment of acoustic emissions has considered the potential impacts to flatback and olive ridley turtles. Vessel and seismic acoustic emissions could cause localised and short-term behavioural disturbance to isolated transient individuals, which is unlikely to result in displacement of adult turtles from internesting or nesting habitat critical to the survival of marine turtles.	EPO 5, 6, 7 C 3.3 PS 3.1.1
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.				

[20] http://www.ningalooturtles.org.au/media_reports.html

Table 6-21: 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 Section 6.7.3 Not inconsistent assessment: The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales.	EPO 5, 6, 7 C 3.1, 3.2, 3.3 PS 3.1.1, 3.2.1, 3.3.1
	Action Area A.4: Minimising vessel collisions	Action 3: Ensure the risk of vessel strikes on blue whales is considered when assessing actions that increase vessel traffic in areas where blue whales occur and, if required, appropriate mitigation measures are implemented	Refer Section 6.8.8 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 overlaps with the northern migration, individuals may deviate slightly from migratory route, but will continue on their migration to possible breeding grounds in Indonesian waters. Vessel collisions with pygmy blue whales are highly unlikely to occur, given the very slow vessel speeds and presence of MFOs.	EPO 24 C 3.1 PS 3.1.1
	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 movements21).	N/A

[21] Double, M.C., Andrews-Goff, V., Jenner, K.C.S., Jenner, M.-N., Laverick, S.M., Branch, T.A., Gales, N.J., 2014. Migratory movements of pygmy blue whales (*Balaenoptera musculus brevicauda*) between Australia and Indonesia as revealed by satellite telemetry. PloS One 9, e93578

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 6-22: Assessment against relevant Marine Debris Threat Abatement Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Marine Debris TAP	Objective 1: Contribute to long-term prevention of marine debris.	Action 1.02: Limit the amount of single use plastic material lost to the environment in Australia.	Refer Section 6.8.5 Not inconsistent assessment: The assessment of accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to vertebrate wildlife.	EPO 2, 5, 6, 7, 8, 19, 20 C 7.1, 11.1, 10.4, 11.2 EPS 7.1.1, 11.1.1, 10.4.1, 11.2.1
Assessment Summary The Marine Debris TAP has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

7 IMPLEMENTATION STRATEGY

7.1 Overview

Regulation 14 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 environmental risks and impacts are continually being reduced to ALARP and are acceptable, and that EPOs and standards outlined in this EP are achieved.

Woodside, as Operator, is responsible for ensuring the Petroleum Activities Program is managed in accordance with this Implementation Strategy and the WMS (see **Section 1.9**).

7.2 Systems, Practice and Procedures

All operational activities are planned and carried out in accordance with relevant legislation and standards, management measures (i.e. controls) identified in this EP and internal environment standards and procedures (**Section 6**).

The systems, practices and procedures that will be implemented are listed in the 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 Assessment of Project Fluids

All chemicals that may be operationally released or discharged to the marine environment by the Petroleum Activities Program are evaluated using a defined framework and set of tools to ensure the potential impacts are acceptable, ALARP and meet Woodside's expectation for environmental performance.

The chemical assessment process follows the principles outlined in the Offshore Chemical Notification Scheme (OCNS), which manages chemical use and discharge in the United Kingdom (UK) and the Netherlands. It applies the requirements of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention). The OSPAR Convention is widely accepted as best practice for chemical management.

All chemical substances on the OCNS ranked list of registered products have an assigned ranking based on toxicity and other relevant parameters, such as biodegradation and bioaccumulation, in accordance with one of two schemes (as shown in **Figure 7-1**):

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

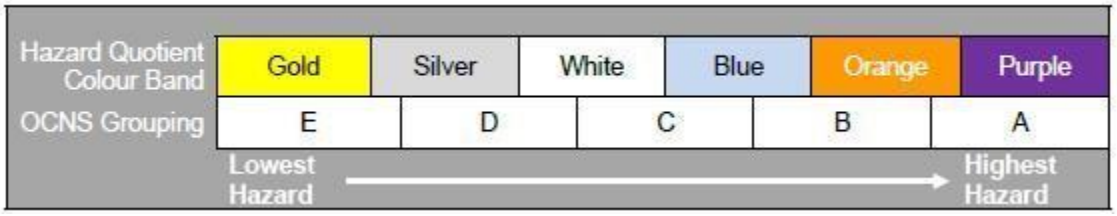


Figure 7-1: OCNS ranking scheme

Chemicals fall into the following assessment types:

- No further assessment: Chemicals with an HQ band of Gold or Silver or an OCNS ranking of E or D with no substitution or product warnings do not require further assessment. Such chemicals do not represent a significant impact on the environment under standard use scenarios and are therefore considered ALARP and acceptable.
- Further assessment/ALARP justification required: The following types of chemicals require further assessment to understand the environmental impacts of discharge into the marine environment:
  - chemicals with no OCNS ranking
  - chemicals with an HQ band of White, Blue, Orange or Purple or an OCNS ranking of A, B or C
  - chemicals with an OCNS product or substitution warning.

This includes assessing the ecotoxicity, biodegradation and bioaccumulation of the chemicals in the marine environment in accordance with the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) Hazard assessment and the Department of Mines and Petroleum (DMP) Chemical Assessment Guide: Environmental Risk Assessment of Chemicals used in WA Petroleum Activities Guideline.

Ecotoxicity

Chemical ecotoxicity is assessed using the criteria used by CEFAS to group chemicals based on ecotoxicity results (**Table 7-1**). If a chemical has an aquatic or sediment toxicity within the criteria for the OCNS grouping of D or E, this is considered acceptable in terms of ecotoxicity.

Table 7-1: CEFAS OCNS grouping based on ecotoxicity results

Initial Grouping	A	B	C	D	E
Results for aquatic-toxicity data (ppm)	<1	>1-10	>10-100	>100-1000	>1000
Results for sediment toxicity data (ppm)	<10	>10-100	>100-1000	>1000-10,000	>10,000

Note: Aquatic toxicity refers to the Skeletonema costatum EC50, Acartia tonsa LC50 and Scophthalmus maximus (juvenile turbot) LC50 toxicity tests; sediment toxicity refers to Corophium volutator LC50 test.

Biodegradation

The biodegradation of chemicals is assessed using the CEFAS biodegradation criteria, which align with the categorisation outlined in the DMP Chemical Assessment Guide: Environmental Risk Assessment of Chemicals used in WA Petroleum Activities Guideline.

CEFAS categorises biodegradation into the following groups:

- readily biodegradable: results of >60% biodegradation in 28 days to an OSPAR harmonised offshore chemical notification format (HOCNF) accepted ready biodegradation protocol
- inherently biodegradable: results >20% and <60% to an OSPAR HOCNF accepted ready biodegradation protocol or result of >20% by OSPAR accepted inherent biodegradation study
- not biodegradable: results from OSPAR HOCNF accepted biodegradation protocol or inherent biodegradation protocol are <20%, or half-life values derived from aquatic simulation test indicate persistence.

Chemica with >60% biodegradation in 28 days to an OSPAR HOCNF accepted ready biodegradation protocol are considered acceptable in terms of biodegradation.

Bioaccumulation

The bioaccumulation of chemicals is assessed using the CEFAS bioaccumulation criteria, which align with the categorisation outlined in the DMP Chemical Assessment Guide: Environmental Risk Assessment of Chemicals used in WA Petroleum Activities Guideline.

The following guidance is used by CEFAS:

- non-bioaccumulative: Log Pow <3, or BCF ≤100 and molecular weight is ≥700
- bioaccumulative: Log Pow ≥3 or BC >100 and molecular weight is <700.

Chemicals that meet the non-bioaccumulative criteria are considered acceptable. If a product has no specific ecotoxicity, biodegradation or bioaccumulation data available, the following options are considered:

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

Alternatives

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

Decision

Once the further assessment/ALARP justification has been completed, the relevant environment adviser must concur that the environmental risk as a result of chemical use is ALARP and acceptable.

7.2.2 Woodside IMS risk assessment process

7.2.2.1 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 the following:

- Vessels or immersible equipment that do not plan to enter the IMS Management Area (IMSMA)[22] or operational areas defined in environmental approvals

[22] MSMA is based on current legal framework and includes all nearshore waters around Australia, extending from the lowest astronomical tide mark to 12 nm from land (including Australian territorial islands). The IMSMA also includes all waters within 12 nm from the 50 metre depth contour outside of the 12 nm boundary (i.e. Submerged reefs and atolls).

- ‘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
- Locally sourced vessels or immersible equipment from within the Pilbara locally sourced zone[23]. Vessels, or immersible equipment are defined as Locally Sourced when the same supply facilities/port have been used since their last IMS inspection, full hull clean in dry dock or application of antifouling coating (AFC[24]).

7.2.2.2 Risk assessment process

Woodside’s IMS risk assessment process was developed with regard to the national biofouling management guidelines for the petroleum production and exploration industry and guidelines for the control and management of a ships’ biofouling to minimise the transfer of invasive aquatic species (IMO Guidelines, 2011).

In order to effectively evaluate the potential for vessels and immersible equipment to introduce IMS, a risk assessment process has been developed to score and evaluate the risk posed by each Project vessel, or immersible equipment planning to undertake activities within the IMSMA / Operational Area. The risk assessment process considers a range of factors, as listed in **Table 7-2** and **Table 7-3**.

The IMS risk assessments will be undertaken by a trained environment adviser who has completed relevant Woodside IMS training or by a qualified and experienced IMS inspector. A QA/QC process is implemented for all Woodside conducted IMS risk assessments where a secondary trained environment adviser verifies the assessment to minimise the risk of misapplication and errors within the risk assessment process.

Table 7-2: Key factors considered as a part of the risk assessment process for vessels

Factors	Details
Vessel type	The risk of IMS infection varies depending on the type of vessel undertaking the activity. A higher risk rating is applied for more complex, slow-moving vessels (e.g., dredges) in comparison to simple vessels (e.g., crew transfer vessel).
Recent IMS inspection and cleaning history, including for internal niches	In the case of biofouling on external hull niches, different risk ratings are applied 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.

[23] The Pilbara Zone includes Port, nearshore and offshore movements between Exmouth and Port Headland (excluding high environmental value areas, World Heritage Areas, Commonwealth Marine Reserve Sanctuary Zones and State Marine Management Areas and Marine Parks).

[24] 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 <12nm/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
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.
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 nautical miles of land. The greater the number of periods the higher the risk factor applied.
Region of stationary or slow periods	A further multiplier is applied depending on the location of the stationary/slow speed periods. The highest risk rating applied if the stationary or slow speed periods occurred within ports or coastal waters of the same climatic region,
Type of activity – contact with seafloor.	The potential for the introduction of IMS varies on the planned vessel activity taking place. Those activities that come in contact with sediments and thus have the potential to accumulate and harbour IMS in areas such as hoppers (dredges) and spud cans (drilling rigs) are considered to have a greater risk of infection.

Table 7-3: Key factors considered as a part of the risk assessment process for immersible equipment

Factors	Details
Region of deployment since last thorough clean, particularly coastal locations	Climatic region of use since last overhaul, thorough cleaning or prolonged period out of water (>28 day). Highest risk rating is applied to similar climatic regions. Activities occurring in nearshore areas (less than 50 meters 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, but not limited to, the following:

- Inspection (desktop, in-water or dry dock) by a suitably qualified and experienced IMS inspector 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 Operational Area.
- In-water or dry dock cleaning of the hull and other niche areas. This is 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.
- Treatment of vessels internal seawater systems. This is typically applied in isolation for vessels with AFC applied to their hull within the last twelve 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). This is applicable for Uncertain risk vessels only.
- Reject the vessel.

Project vessels and immersible equipment are required to be a low risk of introducing IMS prior to entering the Operational Area.

7.3 Woodside Decommissioning Framework

Decommissioning is a planned activity for the offshore oil and gas industry. Current best practice is for decommissioning to include:

- designing for decommissioning during the development phase of projects / facilities
- maintaining and removing property, equipment and infrastructure, such as a facility or a pipeline, and plugging wells associated with a petroleum activity
- assessing decommissioning options and opportunities during the operational life of the facility leading up to cessation of production
- selecting, developing and planning the selected decommissioning option
- executing decommissioning plans; and
- restoring the marine environment.

This assists with compliance with Section 270 and Section 572 (3) of the OPGGS Act, which requires titleholders to remove property when it is neither used, nor to be used, in connection with the operations..

7.3.1 Decommissioning Planning

Decommissioning planning generally commences 2–10 years prior to Cessation of Production (CoP) (**Figure 7-2)**. The timeframe selected for decommissioning planning depends on the complexity of the infrastructure requiring decommissioning.

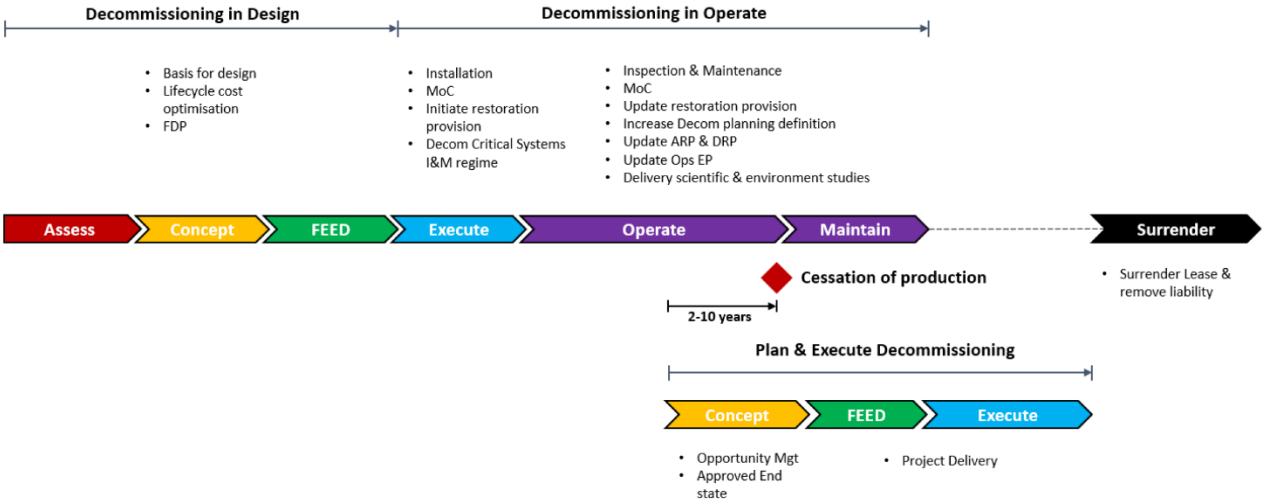


Figure 7-2: Woodside's process for decommissioning planning

7.3.1.1 Scarborough Decommissioning Planning

In proactively planning for decommissioning, the following information has been collated within a Scarborough Decommissioning Strategy, for all major and ancillary infrastructure:

- Specifications
- Compositions
- Decommissioning critical systems
- IMMR management plans
- Feasibility of infrastructure removal options

This information will be reviewed for accuracy and regulatory compliance prior to start-up, before being captured in Maintenance Builds / Plans and handed over to Production for continual management throughout field life. Ancillary equipment will be tracked and inventoried in the same way, and removal options will be subject to future decommissioning planning, as per **Figure 7-2**.

The identified decommissioning critical systems are asset systems that are designed to facilitate the flushing, cleaning and decommissioning of infrastructure. These systems were identified through consultation with package leads and will be appropriately maintained. The standard IMMR requirements will ensure that the systems remain in functional condition, in connection with operations until EOFL.

7.3.1.2 Roles and Responsibilities

Key roles and responsibilities for Woodside and contractor personnel relating to implementing, managing and reviewing this EP are described in **Table 7-4**. Individuals fulfilling these roles will differ between each activity. Roles and responsibilities for oil spill preparation and response are outlined in **Appendix D** and the *Woodside Oil Pollution Emergency Arrangements (Australia)*.

It is the responsibility of all Woodside employees and contractors to implement the Woodside *Environment and Biodiversity Policy* (**Appendix A**) *and Health and Safety Policy* in their areas of responsibility and that the personnel are suitably trained and competent in their respective roles.

Table 7-4: Roles and responsibilities

Title (role)	Environmental Responsibilities
Office-based Personnel	
Woodside Project Activity Manager (or delegate/s)	● Monitor and manage the activity so it is undertaken as per the relevant standards and commitments in this EP. ● Notify the Woodside Environment Adviser of any scope changes in a timely manner. ● Liaise with regulatory authorities as required. ● Review this EP as necessary and manage change requests. ● Ensure all project and support vessel crew members complete an HSE induction. ● Verify that contractors meet environmental related contractual obligations. ● Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's Health, Safety and Environment Reporting and Investigation Procedure. ● Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Environmental Adviser	● Verify relevant Environmental Approvals for the activities exist prior to commencing activity. ● Track compliance with performance outcomes and performance standards as per the requirements of this EP. ● Prepare environmental component of relevant Induction Package. ● Assist with the review, investigation and reporting of environmental incidents. ● Ensure environmental monitoring and inspections/audits are undertaken as per the requirements of this EP. ● Liaise with relevant regulatory authorities as required. ● Assist in preparation of external regulatory reports required, in line with environmental approval requirements and Woodside incident reporting procedures. ● Monitor and close out corrective actions (Campaign Action Register (CAR)) identified during environmental monitoring or audits. ● Provide advice to relevant Woodside personnel and contractors to assist them to understand their environment responsibilities. ● Liaise with primary installation contractors to ensure communication and understanding of environment requirements as outlined in this EP and in line with Woodside's Compass values and management systems.
Woodside Corporate Affairs Adviser	● Prepare and implement the Stakeholder Consultation Plan for the Petroleum Activities Program. ● Report on stakeholder consultation.

Title (role)	Environmental Responsibilities
	● Ongoing liaison and notification as required as per Section 7.8.
Woodside Marine Assurance Superintendent	● Conducts 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 CICC Duty Manager	On receiving notification of an incident, the Woodside CICC Duty Manager 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 impact, risk and progress to the Crisis Management Team and stakeholders ● 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.
Vessel-based Personnel	
Vessel Master (all vessel types)	● Ensure the vessel management system and procedures are implemented. ● Ensure personnel commencing work on the vessel receive an environmental induction that meets the relevant requirements specified in this EP. ● Ensure personnel are competent to undertake the work they have been assigned. ● Verify SOPEP drills are conducted as per the vessel's schedule. ● Ensure the vessel Emergency Response Team (ERT) has been given sufficient training to implement the SOPEP. ● Ensure any environmental incidents or breaches of relevant Environmental Performance Outcomes or performance standards detailed in this EP, are reported immediately to the Woodside Well Site Manager. ● Ensure corrective actions for incidents or breaches are developed, communicated to the Well Site Representative, and tracked to close out in a timely manner. Close out of actions is communicated to the Well Site Representative.
Vessel Logistics Coordinators	● Ensure waste is managed on the relevant vessels and sent to shore as per the relevant Waste Management Plan.

Title (role)	Environmental Responsibilities
Vessel HSE Advisers*	● Support the Woodside Site Representative to ensure the controls detailed in this EP relevant to offshore activities are implemented on the vessels and help collect and record evidence of implementation (other controls are implemented and evidence collected onshore). ● Support the Woodside Site Representative to ensure the EPOs are met and the PSs detailed in this EP are implemented on the vessels ● Support the Woodside Site Representative to ensure environmental incidents or breaches of outcomes or standards outlined in this EP, are reported, and corrective actions for incidents and breaches are developed, tracked and closed out in a timely manner. ● Ensure periodic environmental inspections/reviews are completed and corrective actions from inspections are developed, tracked and closed out in a timely manner. ● Review contractors' procedures, input into Toolbox talks and JSAs. ● Provide day-to-day environmental support for activities in consultation with the Woodside Environment Adviser.
Offshore Construction Manager (OCM)*	● Confirm that activities are undertaken in accordance with this EP, as detailed in the Woodside approved Contactor Environmental Management Plan ● Ensure personnel commencing work on the project receive a relevant environmental induction that meets the requirements specified in this EP ● Ensure personnel are competent to undertake the work they have been assigned ● Ensure any environmental incidents or breaches of objectives, standards or criteria outlined in this EP, are reported immediately to the Woodside Responsible Engineer or Vessel Master.
Woodside Site Representative (WSR) / Resident Engineer*	● Ensure activities are undertaken as detailed in this EP. ● Ensure the management measures made in this EP are implemented on the vessel ● Ensure environmental incidents or breaches of objectives, standards or criteria outlined in this EP, are reported as per the Woodside Corporate Event Notification Matrix ● Verify HSE improvement actions identified during the project are implemented where practicable ● Ensure periodic environmental inspections are completed.

**Apply to primary installation vessels – other vessels in the Petroleum Activities Program will have different levels of crewing. Where named roles are not present onboard, responsibilities will fall to the primary installation vessel personnel who will manage the other vessels accordingly.*

7.4 Training and Competency

7.4.1 Overview

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 vessel personnel, detailing awareness and compliance with the project vessel Contractor's environmental policy and environmental management system.

7.4.2 Inductions

Inductions are provided to all relevant personnel (e.g. contractors and Company representatives) before mobilising to or on arrival at the activity location. The induction covers the HSE requirements and environmental information specific to the activity location. Attendance records will be maintained.

The Petroleum Activities Program induction may cover information about:

- Description of the activity.
- Ecological and socio-economic values of the activity location, including an overview of pygmy blue whales.
- Regulations relevant to the activity.
- Woodside's Environmental Management System – Environment and Biodiversity 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.
- In addition, the inductions will cover the requirement that there will be no recreational fishing from the vessels.

7.4.3 Activities Program Specific Environmental Awareness

Before petroleum activities begin, a pre-activity meeting will be held on-board the project vessels with all relevant personnel. The pre-activity meeting provides an opportunity to reiterate specific environmental sensitivities or commitments associated with the activity. Relevant sections of the pre-activity meeting will also be communicated through to the support vessel personnel. Attendance lists are recorded and retained.

During operations, regular HSE meetings will be held on the project vessels which cover all crew. During these meetings, recent environmental incidents are regularly reviewed, and awareness material presented.

7.4.4 Marine Fauna Observation Training

Relevant crew onboard the installation vessels will undertake Marine Fauna Observation (MFO) training prior to commencing activities. Woodside and Contractor personnel will be trained to deliver the PBW training ('train-the-trainer' model) by an external organisation specialising in marine environmental training, with expertise in marine fauna observations. Training materials will be developed by the external organisation in consultation with WEL, to ensure Project specific information is incorporated. The bespoke training package will cover:

- An overview of Scarborough Project activities and the cetaceans that may be present during these activities
- An overview of the potential impacts and risks to marine megafauna, including PBW
- An overview of marine megafauna that may be present during activities
- an overview of EP controls and management procedures relevant to marine megafauna (including PBW) presence
- different types of PBW behaviours inc. the difference between foraging and migrating, and how to identify these based on the latest information on persistence in the area, dive time and swimming speed (Owen et al. 2016; AIMS unpublished data 2021; Thums & Ferreira 2021),;
- precautionary approach to identification i.e. assume PBW if positive ID of different species type not possible;
- the observation and reporting requirements.

When trained crew are undertaking observations, expectations are that:

- Observation equipment / tools are used as required (i.e. range-finding binoculars, marine megafauna ID prompts etc.)
- Escalation process carried out if cetaceans/PBW are identified to allow for implementation of adaptive management as required by controls throughout EP
- Make and maintain records including the date, time and approximate distance from the vessel, and the action taken to comply with EPS

Completion of PBW Observation Training (focusing on PBW) is a minimum requirement for those performing observations relevant to PBW mitigation/adaptive management measures in this EP (such as C 3.5, C 3.6). Records will be maintained as evidence of the personnel who have completed PBW observation training.

For any trained crew who haven't conducted PBW observations for greater than 12 months, refresher training is required prior to undertaking the role.

Training and competency is informed by a competency framework and tracked by a contractor MFO Coordinator who assures appropriate competency of trained vessel crew prior to them being allowed to perform MFO duties.

7.4.5 Management of Training Requirements

All personnel on the project vessels are required to be competent to perform their assigned positions. This may be in the form of external or 'on the job' training. The vessel Safety Training Coordinator (or equivalent) is responsible for identifying training needs, keeping records of training performed and identifying minimum training requirements.

7.5 Monitoring, Auditing, Management of Non-conformance and Review

7.5.1 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 (against the MC) 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.

7.5.1.1 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, to ocean and atmosphere.
- Internal auditing and assurance program as described in **Section 7.5.2**.

Throughout this activity, Woodside will continuously identify new source-based risks and impacts through the Monitoring and Auditing systems and tools described above and in **Section 7.5.2**.

7.5.1.2 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). Relevant knowledge is defined as:

- Environmental science supporting the description of the existing environment.
- Socio-economic environment and stakeholder information.
- Environmental legislation.

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 will be assessed using the EP Management of Change Process (refer to **Section 7.6**).

Under the Oil Spill Scientific Monitoring Program preparedness, an annual review and update to the environmental baseline studies database is completed and documented. Periodic location-focused environmental studies and baseline data gap analyses are completed and documented. Any subsequent studies scoped and executed as a result of such gap analysis are managed by the Environment Science Team and tracked via the Corporate Environment Baseline Database.

7.5.2 Auditing

Environmental performance auditing will be performed to:

- Identify potential new or changes to existing environmental impacts and risk, and methods for reducing those to ALARP.
- Confirm that mitigation measures detailed in this EP are effectively reducing environmental impacts and risk, that mitigation measures proposed are practicable and provide appropriate information to verify compliance.
- Confirm compliance with the Performance Outcomes, Controls and Standards detailed in this EP.

Internal auditing will be performed to cover each key project activity as summarised below.

7.5.2.1 Subsea Infrastructure Installation Activities

The following internal assurance will be performed for the subsea infrastructure installation activities:

- Pre-mobilisation inspection/audit report will be conducted by a relevant person (before commencing). 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 installation vessels associated with the above scopes will be audited by Woodside or a delegate. Support or transport vessels will be assessed on a risk-based approach, but will be audited via the primary subsea installation contractor's process.
- At least one operational compliance audit relevant to applicable EP commitments will be conducted by a Woodside Environment Adviser for the subsea infrastructure installation activities. The audit may be conducted offshore or office-based, subject to the duration of the activity and logistics of performing the audit offshore for short duration scopes.
- Contractor-specific HSE audits will also be conducted of the associated 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 (or delegate). 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).

The internal audits and reviews, combined with the ongoing monitoring described in **Section 7.5.1**, and collection of evidence for MC are used to assess EPOs and standards.

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 subsea 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 7.5.3**.

7.5.2.2 Marine Assurance

Woodside's marine assurance is managed by the Marine Assurance Team of the Logistics Function in accordance with Woodside's Marine Offshore Vessel Assurance Procedure. The Woodside

process is based on industry standards and consideration of guidelines and recommendations from recognised industry organisations such as Oil Companies International Marine Forum and International Maritime Contractors Association.

Woodside's Marine Offshore Assurance process is mandatory for all vessels (other than Tankers and Floating Production Storage and Offloading vessels) that are chartered directly by or on behalf of Woodside, including for short term hires (i.e. <3 months in duration). It defines applicable marine offshore assurance activities, ensuring all vessel operators operate seaworthy vessels that meet the requirements for a defined scope of work and are managed with a robust Safety Management System.

The process is multi-faceted and encompasses the following marine assurance activities:

- Safety Management System Assessment
- Dynamic Positioning (DP) System Verification
- Vessel Inspections
- Project support for tender review, evaluation and pre/post contract award.

Vessel inspections are used to verify actual levels of compliance with the company's Safety Management System, the overall condition of the vessel and the status of the planned maintenance system onboard. Woodside Marine Assurance Specialist will conduct a risk assessment on the vessel to determine the level of assurance applied and the type of vessel inspection required.

Methods of vessel inspection may include, and are not limited to:

- Woodside Marine Vessel Inspection
- OCIMF OVID Inspection
- IMCA CMID Inspection
- Marine Warranty Survey

Upon completion of the marine assurance process, to confirm that identified concerns are addressed appropriately and conditions imposed are managed, the Woodside Marine Assurance Team will issue the vessel a statement of approval. Should a vessel not meet the requirements of the Woodside Marine Offshore Vessel Assurance Process and be rejected, there does exist an opportunity to further scrutinise the proposed vessel.

Where a vessel inspection and/or OVMSA Verification Review is not available and all reasonable efforts based on time and resource availability to complete an 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, known as a risk assessment.

7.5.2.3 Risk Assessment

Woodside conducts a risk assessment of vessels where either an OVMSA Verification Review and/or vessel inspection cannot be completed. This is not a regular occurrence and is typically used when the requirements of the assurance process are unable to be met or the processes detailed are not applicable to a proposed vessel(s). The Marine Vessel Risk Assessment will be conducted by the Marine Assurance Specialist, where the vessel meets the short term hire prerequisites.

The risk assessment is a semi-quantitative method of determining what further assurance process activity, if any, is required to assure a vessel for a particular task or role. The process compares the level of management control a vessel is subject to against the risk factors associated with the activity or role.

Several factors are assessed as part of a vessel risk assessment, including:

- Management control factors:
  - Company audit score (i.e. management system)
  - vessel HSE incidents
  - vessel Port State Control deficiencies
  - instances of Port State Control vessel detainment
  - years since previous satisfactory vessel inspection
  - age of vessel
  - contractors' prior experience operating for Woodside.
- Activity risk factors:
  - people health and safety risks (a function of the nature of the work and the area of operation)
  - environmental risks (a function of environmental sensitivity, activity type and magnitude of potential environment damage (e.g. largest credible oil spill scenario))
  - value risk (likely time and cost consequence to Woodside if the vessel becomes unusable)
  - reputation risk
  - exposure (i.e. exposure to risk based on duration of project)
  - industrial relations risk.

The acceptability of the vessel or requirement for further vessel inspections or audits is based on the ratio of vessel score to activity risk. If the vessel management control is not deemed to appropriately manage activity risk, a satisfactory company audit and/or vessel inspection may be required before awarding work.

The risk assessment is valid for the period a vessel is on hire and for the defined scope of work.

7.5.3 Management of Non-conformance

Woodside classifies non-conformances with EPOs and standards in this EP as environmental incidents. Woodside employees and contractors are required to report all environmental incidents, and these are managed as per Woodside's 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.

7.5.4 Review

7.5.4.1 Management Review

Within the Environment Function, senior management regularly monitor and review environmental performance and the effectiveness of managing environmental risks and performance. Within each

Function and Business Unit Leadership Team (e.g. seabed infrastructure installation), managers review environmental performance regularly, including through quarterly HSE review meetings.

Woodside's Environment Team will perform six-monthly reviews of the effectiveness of the implementation strategy and associated tools. This will involve reviewing the:

- Seabed infrastructure installation activities environment KPIs (leading and lagging).
- Tools and systems to monitor environmental performance (detailed in **Section 7.5.1**).
- Lessons learned about implementation tools and throughout each campaign.

Reviews of oil spill arrangements and testing are performed in accordance with **Section 7.9**.

7.5.4.2 Learning and Knowledge Sharing

Learning and knowledge sharing occurs via a number of different methods including:

- Event investigations.
- Event bulletins.
- After action review conducted at the end of each well, including review of environmental incidents as relevant.
- Ongoing communication with project vessel operators.
- Formal and informal industry benchmarking.
- Cross asset learnings.
- Engineering and technical authorities discipline communications and sharing.

7.5.4.3 Review of Impacts, Risks and Controls Across the Life of the EP

In the unlikely case that activities described in this EP do not occur continuously or sequentially, before recommencing activities after a cessation period greater than 12 months, impacts, risks and controls will be reviewed.

The process will identify or review impacts and risks associated with the newly-commencing activity, and will identify or review controls to ensure impacts and risks remain/are reduced to ALARP and acceptable levels. Information learned from previous activities conducted under this EP will be considered. Controls which have previously been excluded on the basis of proportionality will be reconsidered. Any required changes will be managed by the MOC process outlined below (**Section 7.6**).

7.6 Management of Change and Revision

7.6.1 EP Management of Change

Management of changes are managed in accordance with Woodside's Environmental Approval Requirements Australia Commonwealth Guideline. Management of changes relevant to this EP, concerning the scope of the activity description (**Section 3**) including: review of advances in technology at stages where new equipment may be selected such as vessel contracting; changes in understanding of the environment, DAWE 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**); and potential new advice from external stakeholders (**Section 5**), will be managed in accordance with Regulation 17 of the Environment Regulations.

Risk will be assessed in accordance with the environmental risk management methodology (**Section 2.3**) 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 17 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 17 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.

7.6.2 OPEP Management of Change

Relevant documents from the OPEP will be reviewed in the following circumstances:

- implementation of improved preparedness measures
- a change in the availability of equipment stockpiles
- a change in the availability of personnel that reduces or improves preparedness and the capacity to respond
- the introduction of a new or improved technology that may be considered in a response for this activity
- to incorporate, where relevant, lessons learned from exercises or events
- 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 17 to determine if EP, including OPEP, resubmission is required (see **Section 7.6.1**). Changes with potential to influence minor or technical changes to the OPEP are tracked in management of change records, project records and incorporated during internal updates of the OPEP or the five-yearly revision.

7.7 Record Keeping

Compliance records (outlined in MC in **Section 6**) will be maintained.

Record keeping will be in accordance with Regulation 14(7) that addresses maintaining records of emissions and discharges.

7.8 Reporting

To meet the EPOs and standards outlined in this EP, Woodside reports at a number of levels, as outlined in the next sections.

7.8.1 Routine Reporting (Internal)

7.8.1.1 Daily Progress Reports and Meetings

Daily reports for activities are prepared and issued to key support personnel and stakeholders, by relevant managers responsible for the well. The report provides performance information about installation activities, heath, safety and environment, and current and planned work activities.

Meetings between key personnel are used to transfer information, discuss incidents, agree plans for future activities and develop plans and accountabilities for resolving issues.

7.8.1.2 Regular HSE Meetings

Regular dedicated HSE meetings are held with the offshore and Perth-based management and advisers to address targeted HSE incidents and initiatives. Minutes of these meetings are produced and distributed as appropriate.

7.8.1.3 Performance Reporting

Monthly and quarterly performance reports are developed and reviewed by the Function and Business Unit Leadership Teams. 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.

7.8.2 Routine Reporting (External)

7.8.2.1 Ongoing Consultation

In accordance with Regulation 14 (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 or organisations listed in **Table 7-5**.

Any significant changes on this activity will be communicated to relevant persons. Woodside hosts community forums at which members are updated on Woodside activities. These community and heritage meetings are held on a regular basis (for example, Karratha Community Liaison Group, Exmouth Community Reference Group). Representatives 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 interested in the activities, can remain up to date on this activity through subscribing to our website.

In accordance with Regulation 14 (9) of the Environment Regulations, the implementation strategy must provide for appropriate consultation with relevant authorities of the Commonwealth, a State or Territory and other relevant interested persons or organisations.

Woodside's approach to ongoing consultation is that feedback and comments received from relevant persons continue to be assessed and responded to, as required, through the life of an EP, including

during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation (as set out in **Section 5.2**).

Woodside proposes to undertake the engagements with directly impacted relevant persons listed **in Table 7-5.** Relevant new information identified during ongoing consultation will be assessed, as appropriate using the EP Management of Knowledge (refer to **Section 7.5.1.2)** and Management of Change Process (refer to **Section 7.6**).

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 merely interested in the activities, can otherwise remain up to date on this activity through subscribing to the Woodside website, or by reading the publicly available version of the EP on NOPSEMA's website, where available.

Should consultation feedback be received following EP acceptance that identifies a measure or control that requires implementation or update to meet the intended outcome of consultation (see **Section 2**), Woodside will apply its EP Management of Knowledge process (refer to **Section 7.5.1.2**) and Management of Change process (refer to **Section 7.6**), as appropriate.

The ongoing consultation engagements that Woodside intends to progress for this EP are set out in the table below.

Table 7-5: Ongoing consultation engagements

Report/ Information	Recipient	Purpose	Frequency	Content
Emails / Meetings	Relevant cultural authorities	Identification, assessment and consideration of cultural values relevant to the Operational Area and EMBA.	Ongoing	Assessment of cultural values Any relevant new information on cultural values will be assessed using the EP Management of Knowledge (see Section 7.5) and Management of Change Process (see to Section 7.6).
Notification (email) Updates (email)	AHO	As requested by AMSA during consultation.	No less than 4 weeks prior to commencement. As required.	PS 2.3.1 (Section 6.7.2) Date of activity start. Changes to planned activities
Notification (email) Update (email)	AMSA	As requested by AMSA during consultation	At least 24-48 hours before operations commence. Provide updates to the AHO and JRCC should there be changes to the activity.	PS 2.5.1 (Section 6.7.2) Date of activity start. Changes to planned activities

Report/ Information	Recipient	Purpose	Frequency	Content
Notification (email)	DoD	As requested by DoD during consultation	Five weeks prior to commencement of activities.	PS 2.7.1 (Section 6.7.2) Date of activity start.
Notification (email)	DMIRS	To meet DMIRS requirements	At least 10 days prior to commencement	Activity start date
Notification (email)	Eni AFMA WAFIC CFA DPIRD Recfishwest DAFF (Fisheries) Individual fishery licence holders (no relevant fisheries identified at time of EP submission)	As requested during consultation	At least 10 days prior to commencement	PS 2.4.1 (Section 6.7.2) Date of activity start and end.
Notification (email)	Other relevant persons	Notification of significant change	As appropriate	Notification of significant change
Emails/meetings	Persons or organisations who provide feedback to Woodside post EP submission.	Identification, assessment and consideration of feedback, claims and / or objections	As appropriate	Assessment of claims and / or objections. Relevant new information will be assessed using the EP Management of Knowledge (ref to Section 7.5) and Management of Change Process (refer to Section 7.6).

7.8.2.2 Start and End Notifications of the Petroleum Activities Program

In accordance with Regulation 29, Woodside will notify NOPSEMA of the commencement of the Petroleum Activities Program at least ten days before the activity commences, and will notify NOPSEMA within ten days of completing the activity.

7.8.2.3 Environmental Performance Review and Reporting

In accordance with applicable environmental legislation for the activity, Woodside is required to report information about environmental performance to the appropriate regulator. Regulatory reporting requirements are summarised in **Table 7-6**.

Table 7-6: Routine external reporting requirements

Report	Recipient	Frequency	Content
Monthly Recordable Incident Reports (Appendix E)	NOPSEMA	Monthly, by the 15th of each month.	Details of recordable incidents that have occurred during the Petroleum Activities Program for previous month (if applicable).

Report	Recipient	Frequency	Content
Environmental Performance Report	NOPSEMA	Annually, with the first report submitted within 12 months of the commencement of the Petroleum Activities Program covered by this EP (as per the requirements of Regulation 14(2).	Compliance with EPOs, controls and standards outlined in this EP, in accordance with the Environment Regulations.

7.8.2.4 End of the Environmental Plan

The EP will end when Woodside notifies NOPSEMA that the Petroleum Activities Program has ended and all of the obligations identified in this EP have been completed, and NOPSEMA has accepted the notification, in accordance with Regulation 25A of the Environment Regulations.

7.8.3 Incident Reporting (Internal)

The process for reporting environmental incidents is described in **Section 7.8.4** of this EP. It is the responsibility of the Woodside Project Manager to ensure reporting of environmental incidents meets Woodside and regulatory reporting requirements as detailed in the Woodside HSE Event Reporting and Investigation Procedure and this section of this EP.

7.8.4 Incident Reporting (External) – Reportable and Recordable

7.8.4.1 Reportable Incidents

Definition

A reportable incident is defined under Regulation 4 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 2.3.2**)).
- 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 2.3.2**).

The environmental Risk assessment for the Petroleum Activities Program (**Section 6**) identified one risk with a potential consequence level of C+ for environment, a vessel collision resulting in a hydrocarbon spill. All incidents with actual or potential environmental consequences will be investigated. Where an actual or potential environment consequence of C+ is identified this incident will still be classified as a reportable incident and appropriate notifications completed.

Any such incidents represent potential events which would be reportable incidents. Incident reporting is performed with consideration of NOPSEMA (2014) guidance stating, ‘if in doubt, notify NOPSEMA’, and assessed on a case-by-case basis to determine if they trigger a reportable incident as defined in this EP and by the Regulations.

Notification

NOPSEMA will be notified of all reportable incidents, according to the requirements of Regulations 26, 26A and 26AA of the Environment Regulations. Woodside will:

- Report all reportable incidents to the regulator (orally) ASAP, but within two hours of the incident or of its detection by Woodside.

- Provide a written record of the reported incident to NOPSEMA, the National Offshore Petroleum Titles Administrator (NOPTA) and the Department of the responsible State Minister (DMIRS) 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 days of the incident or of its detection by Woodside.
- Provide a copy of the written report to the NOPTA and DMIRS, within seven days of the written report being provided to NOPSEMA.

AMSA will be notified of oil spill incidents ASAP after their occurrence, and DCCEEW notified if MNES are to be affected by the oil spill incident.

7.8.4.2 Recordable Incidents

Definition

A recordable incident as defined under Regulation 4 of the Environment Regulations is an incident arising from the activity that 'breaches an environmental performance outcome or environmental performance standard, in the EP that applies to the activity, that is not a reportable incident'.

Notification

NOPSEMA will be notified of all recordable incidents, according to the requirements of Regulation 26B(4), no later than 15 days after the end of the calendar month using the NOPSEMA Form – Recordable Environmental Incident Monthly Summary Report (**Appendix E**) detailing:

- All recordable incidents that occurred during the calendar month.
- All material facts and circumstances concerning the recordable incidents that the operator knows or is able, by reasonable search or enquiry, to find out.
- Any action taken to avoid or mitigate any adverse environment impacts of the recordable incidents.
- The corrective action that has been taken, or is proposed to be taken, to prevent similar recordable incidents.
- The action that has been taken, or is proposed to be taken, to prevent a similar incident occurring in the future.

7.8.4.3 Other External Incident Reporting Requirements

In addition to the notification and reporting of environmental incidents defined under the Environment Regulations and Woodside requirements, **Table 7-7** describes the incident reporting requirements that also apply to the PAP.

Table 7-7: External Incident Reporting Requirements

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
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 24hour 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 24hour 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

The following activities should also be reported to AMSA via RCC Australia by the Vessel Master:

- loss of plastic material
- garbage disposed of in the sea within 12 nm of land (garbage includes food, paper, bottles, etc)
- any loss of hazardous materials.

For oil spill incidents, other agencies and organisations will be notified as appropriate to the nature and scale of the incident as per procedures and contact lists in the Oil Pollution Emergency Arrangements (Australia) and the WA-61-L and WA-62-L Subsea Infrastructure Installation Oil Pollution First Strike Plan (**Appendix H**).

External incident reporting requirements under the *OPGGS (Safety) Regulations*, including under Subregulation 2.42, notices and reports of dangerous occurrences will be reported to NOPSEMA under the approved activity safety cases.

7.9 Emergency Preparedness and Response

7.9.1 Overview

Under Regulation 14(8), the implementation strategy must contain an Oil Pollution Emergency Plan (OPEP) and provide for updating the OPEP. Regulation 14(8AA) outlines the requirements for the OPEP which must include adequate arrangements for responding to and monitoring 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 7-8**.

Table 7-8: Oil pollution and preparedness and response overview

Content	Environment Regulations Reference	Document/Section Reference
Details of (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 13(5), (6), 14(3)	Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**)
Describes the OPEP	Regulation 14(8)	EP: Woodside's oil pollution emergency plan has the following components: • Woodside Oil Pollution Emergency Arrangements (Australia) • Oil Pollution First Strike Plan (Appendix H) • 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 14(8AA)	Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**) Oil Pollution First Strike Plan (**Appendix H**)
Details the arrangements for updating and testing the oil pollution response arrangements	Regulation 14(8), (8A), (8B), (8C)	EP: **Section 7.9.5** Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**)
Details of provisions for monitoring impacts to the environment from oil pollution and response activities	Regulation 14(8D)	Oil Spill Preparedness and Response Mitigation Assessment **(Appendix D**)

Content	Environment Regulations Reference	Document/Section Reference
Demonstrates that the oil pollution response arrangements are consistent with the national system for oil pollution preparedness and control	Regulation 14(8E)	Oil Pollution Emergency Arrangements (Australia)

7.9.2 Emergency Response Training

Regulation 14(5) requires that the implementation strategy includes measures to ensure that employees and contractors have the appropriate competencies and training. Woodside has conducted a risk-based training needs analysis on positions required for effective oil spill response. Following the mapping of training to Woodside identified competencies, training was then mapped to positions based on their required competencies.

Table 7-9: Minimum levels of competency for key IMT positions

IMT Position	Minimum Competency
Corporate Incident Coordinate Centre (CICC) Leader	• Incident and Crisis Leadership Development Program (ICLDP) • Oil Spill Response Skills Enhancement Course (OSREC – internal course) • Participation in L2 oil spill exercise (initial) • Participation in L2 oil spill exercise (refresher)
Security & Emergency Manager Duty Manager	• ICLDP • OSREC • IMO2 or equivalent spill response specialist level with an oil spill response organisation (OSRO) • Participation in L2 oil spill exercise (initial) Participation in L2 oil spill exercise (refresher)
Operations, Planning, Logistics, Safety	• OSREC • ICC Fundamentals Course (internal course) • Participation in L2 oil spill exercise (initial) • Participation in L2 oil spill exercise (refresher)
Environment Coordinator	• ICC Fundamentals • OSREC • IMO2 or equivalent spill response specialist level with an OSRO • Participation in L2 oil spill exercise (initial) • Participation in L2 oil spill exercise (refresher)

Note on competency/equivalency
In 2018 Woodside undertook a review of incident and crisis systems, processes and tools to assess whether these were fit-for purpose and has rolled out a change to the Incident and Crisis Management training and the oil spill response training requirements for both ICC and field-based roles. The revised ICC Fundamentals training Program and Incident and Crisis Leaders Development Program (ICLDP) align with the performance requirements of the *PMAOMIR320 – Manage Incident Response Information* and *PMAOM0R418 - Coordinate Incident Response.* Regarding training specific equivalency; ● ICLDP is mapped to *PMAOM0R418* (and which is equivalent to IMOIII when combined with Woodside's OSREC course) and ensures broader incident management principles aligned with Australasian Inter-service Incident Management System (AIIMS). ● The revised ICC Fundamentals Course is mapped to *PMAOMIR320* (and which is equivalent to IMOII). The blended learning program offers modules aligned to IMOIII, IMOII, IMOI and AMOSC Core Group Training Oil Spill Response Organisation Specialist Level training. ● OSREC involves the completion of two (2) online AMSA Modules (Introduction to National Plan and Incident management; and Introduction to oil spills) as well as elements of IMOI and IMOII tailored to Woodside specific OSR capabilities. Woodside Learning Services (WLS) are responsible for collating and maintaining personnel training records. The HSP Dashboard reflects the competencies required for each oil spill role (IMT/operational).

7.9.3 Emergency Response Preparation

The CICC, based in Woodside's head office in Perth, is the onshore coordination point for an offshore emergency. The CICC is staffed by a roster of appropriately skilled personnel available on call 24 hours a day. The CICC, under the leadership of the CICC 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 an Emergency Response Plan (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. For a vessel activity, the ERP will be a bridging document to the contracted vessel's emergency documentation. This document summarises the emergency command, control and communications processes for the integrated operation and management of an emergency. It is developed in collaboration with the contracted vessel and ensures roles and responsibilities between the contracted vessel and Woodside personnel are identified and understood. The ERPs will contain instructions for vessel emergency, medical emergency, search and rescue, reportable incidents, incident notification, contact information and activation of the contractor's emergency centre and Woodside Communication Centre (WCC).

In the event of an emergency of any type:

- Vessel Master (depending on the location of the emergency) will assume overall onsite command and act as the IC. All persons will be required to act under the IC's directions. The vessels will maintain communications with the onshore project manager and/or other emergency services in the event of an emergency. Emergency response support can be provided by the contractor's emergency centre or WCC if requested by the IC.
- The project vessels will have on-board equipment for responding to emergencies including medical equipment, fire-fighting equipment and oil spill response equipment.

7.9.4 Oil and Other Hazardous Materials Spill

A significant hydrocarbon spill during the proposed Petroleum Activities Program is unlikely, but should such an event occur, it has the potential to result in a serious safety or environmental incident and cause asset and reputational damage if not managed properly. The Woodside Oil Pollution Emergency Arrangements (Australia) document, supported by the Oil Pollution First Strike Plan (**Appendix H**) which provides tactical response guidance to the activity/area and **Appendix D of** this EP, cover spill response for this Petroleum Activities Program.

The Security and Emergency Management Function is responsible for managing Woodside's hydrocarbon spill response equipment and for maintaining oil 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 Woodside Oil Pollution Emergency Arrangements (Australia). AMSA and Woodside have a Memorandum of Understanding in place to support Woodside in the event of an oil spill.

The Oil Pollution First Strike Plan provides immediate actions required to commence a response (**Appendix H**).

The project 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 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**.

7.9.5 Emergency and Spills Response

Woodside categorises incidents and emergencies in relation to response requirements as follows:

7.9.5.1 Level 1

Level 1 incidents are those that can be resolved using existing resources, equipment and personnel. A Level 1 incident is contained, controlled and resolved by site/regionally based teams using existing resources and functional support services.

7.9.5.2 Level 2

Level 2 incidents are characterised by a response that requires external operational support to manage the incident. It is triggered if the capabilities of the tactical level response are exceeded. This support is provided to the activity by activating all or part of the responsible CICC.

7.9.5.3 Level 3

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 ICC may also be activated as required to manage the operational incident response.

7.9.6 Emergency and Spill Response Drills and Exercises

Woodside's capability to respond to incidents will be tested periodically, in accordance with the Emergency and Crisis Management Procedure. The scope, frequency and objective of these tests

is described in **Table 7-10**. Emergency response testing is aligned to existing or developing risks associated with Woodside's operations and activities. Corporate hazards/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 7-10: Testing of response capability

Response Category	Scope	Response Testing Frequency	Response Testing Objective
Level 1 Response	Exercises are project-/ activity-specific	One Level 1 'First Strike' drill conducted within two weeks of commencing activity. For campaigns with an operational duration of greater than one month this will occur within the first two weeks of commencing the activity and then at least every 6-month hire period thereafter.	Comprehensive exercises test elements of the Oil Pollution First Strike Plan (Appendix H). Emergency drills are scheduled to test other aspects of the Emergency Response Plan.
Level 2 Response	Exercises are vessel-specific	Level 2 Emergency Management exercises are relevant to activities with an operational duration of one month or greater. At least one Emergency Management exercise per vessel per campaign must be conducted within the first month of commencing the activity and then at every 6 month hire period thereafter, where applicable based on duration.	Testing both the facility IMT response and/or that of the CICC 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 Officer, in consultation with the Vice President of Security and Emergency Management.	Test Woodside's ability to respond to and manage a crisis level incident

7.9.7 Hydrocarbon Spill Response Testing of Arrangements

There are a number of arrangements which, in the event of a spill, will underpin Woodside's ability to implement a response across its petroleum activities. In order to ensure these arrangements are adequately tested, the Capability Development Team within Security and Emergency Management ensures tests are conducted in alignment with the Hydrocarbon Spill Testing of Arrangements Schedule.

Woodside's arrangements for spill response are common across its Australian operating assets and activities to ensure the controls are consistent. The overall objective of testing these arrangements is to ensure that Woodside maintains an ability to respond to a hydrocarbon spill, specifically to:

- Ensure relevant responders, contractors and key personnel understand and practise their assigned roles and responsibilities.
- Test response arrangements and actions to validate response plans.
- Ensure lessons learned are incorporated into Woodside's processes and procedures and improvements are made where required.

If new response arrangements are introduced, or existing arrangements significantly amended, additional testing is undertaken accordingly. 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 7-8**, up to eight formal exercises are planned annually, across Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

7.9.7.1 Testing of Arrangements Schedule

Woodside's Testing of Arrangements Schedule (**Figure 7-3**) aligns with international good practice for spill preparedness and response management; the testing is compatible with the IPIECA Good Practice Guide and the Australian Institute for Disaster Resilience (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.

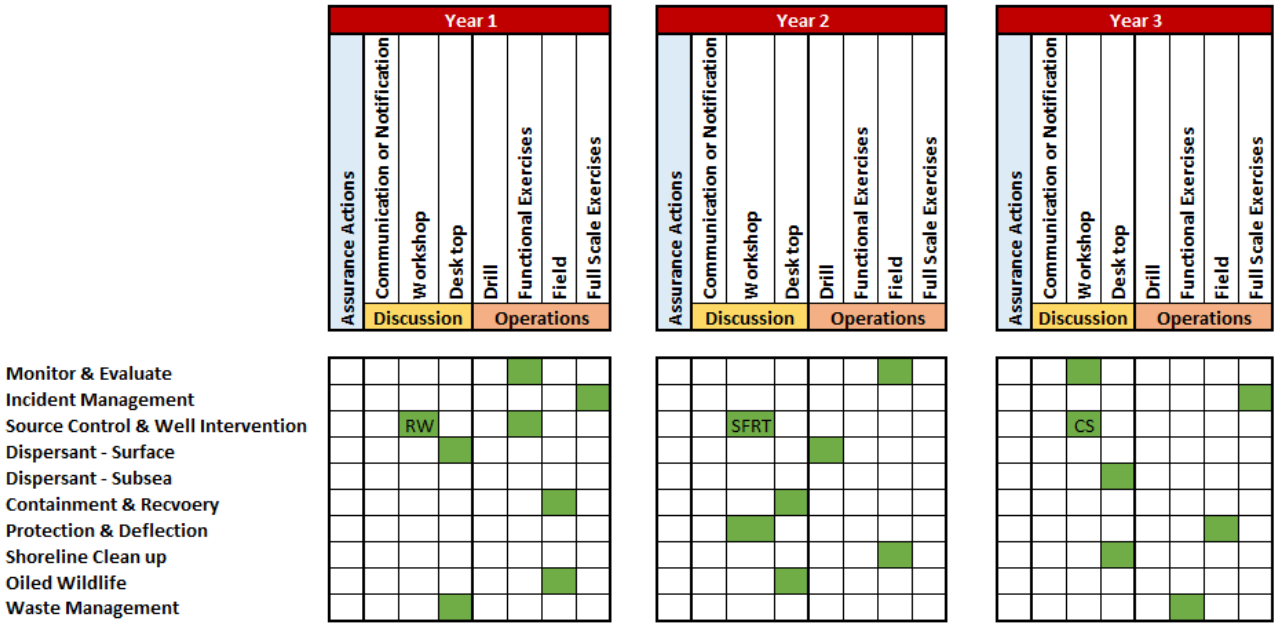


Figure 7-3: Indicative 3-yearly testing of arrangements schedule

The hydrocarbon spill arrangements shown in the rows of the schedule are tested against Woodside's regulatory commitments. Each arrangement has a support agency/company and an area to be tested (e.g., capability, equipment and personnel). For example, an arrangement could be to test Woodside's personnel capability for conducting scientific monitoring, or the ability of the Australian Marine Oil Spill Centre to provide response personnel and equipment.

The vertical columns relate to how hydrocarbon spill arrangements will be tested over the 3-year rolling schedule. The sub-heading for the column describes the standard method of testing likely to be undertaken (e.g., discussion exercise, desktop exercise), and the green cells indicate the arrangements that could be tested for each method.

Some arrangements may be tested across multiple exercises (e.g., critical arrangements) or via other 'additional assurance' methods outside the formal Testing of Arrangements Schedule that also constitute sufficient evidence of testing of arrangements (e.g., audits, no-notice drills, internal exercises, assurance drills).

7.9.8 Cyclone and Dangerous Weather Preparation

As the timing of some activities associated with the Petroleum Activities Program are not yet determined, it is possible subsea infrastructure installation activities will overlap with the cyclone season (November to April, with most cyclones occurring between January and March). If conduction activities in cyclone season, the vessel contractors must have a Cyclone Contingency Plan (CCP) in place outlining the processes and procedures that would be implemented during a cyclone event, which will be reviewed and accepted by Woodside.

The project vessels will receive daily forecasts from the Bureau of Meteorology. If a cyclone (or severe weather event) is forecast, the path and its development will be plotted and monitored using the BoM data. If there is the potential for the cyclone (severe weather event) to affect the Petroleum Activities Program, the CCP 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

9.1 Glossary

Term	Meaning
(the) Regulator	The Government Agency (State or Commonwealth) that is the decision maker for approvals and performs ongoing regulation of the approval once granted
4D seismic data	A set of numerous closely-spaced seismic lines that provide a high spatially sampled measure of subsurface reflectivity and 4D image
Acceptability	The EP must demonstrate that the environmental impacts and risks of an activity will be of an acceptable level as per Regulation 10A(c).
ALARP	A legal term in Australian safety legislation, it is taken here to mean that all contributory elements and stakeholdings have been considered by assessment of costs and benefits, and which identifies a preferred course of action
Ballast	Extra weight taken on to increase a ship's stability to prevent rolling and pitching. Most ships use seawater as ballast. Empty tank space is filled with inert (non-combustible) gas to prevent the possibility of fire or explosion.
Bathymetry	Related to water depth, a bathymetry map shows the depth of water at a given location on the map.
Benthos/Benthic	Relating to the seabed and includes organisms living in or on sediments/rocks on the seabed
Biodiversity	Relates to the level of biological diversity of the environment. The EPBC Act defines biodiversity as "the variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part) and includes: (a) diversity within species and between species; and (b) diversity of ecosystems".
Biota	The animal and plant life of a particular region, habitat or geological period
Cetacean	Whale and dolphin species
Consequence	The worstcase credible outcome associated with the selected event, assuming some controls (prevention and mitigation) have failed. Where more than one impact applies (e.g. environmental and legal/compliance), the consequence level for the highest severity impact is selected.
Coral	Anthozoa that are characterised by stonelike, horny or leathery skeletons (external or internal). The skeletons of these animals are also called coral.
Coral Reef	A wave-resistant structure resulting from skeletal deposition and cementation of hermatypic corals, calcareous algae, and other calcium carbonate-secreting organisms
Crustacean	A large and variable group of mostly aquatic invertebrates that have a hard external skeleton (shell), segmented bodies, with a pair of often very modified appendages on each segment, and two pairs of antennae (e.g. crabs, crayfish, shrimps, wood lice, water fleas and barnacles)
Cyclone	A rapidly-rotating storm system characterised by a low-pressure centre, strong winds, and a spiral arrangement of thunderstorms that produce heavy rain
dB	Decibel, a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (that is, 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies
dB re 1 µPa2	Measure of underwater noise, in terms of sound pressure. Because the dB is a relative measure rather than an absolute measure, it must be referenced to a standard 'reference intensity', in this case 1 micro Pascal (1 mPa), which is the standard reference that is used. The dB is also measured over a specified frequency, which is usually either a one Hertz bandwidth (expressed as dB re 1 mPa2/Hz), or over a broadband that has not been filtered. Where a frequency is not specified, it can be assumed that the measurement is a broadband measurement.

Term	Meaning
dB re 1 μPa².s	Normal unit for sound exposure level
Demersal	Living close to the floor of the sea (typically of fish)
Dynamic positioning	In reference to a marine vessel that uses satellite navigation and radio transponders in conjunction with thrusters to maintain its position
Echinoderms	Any of numerous radially symmetrical marine invertebrates of the phylum Echinodermata, which includes the starfishes, sea urchins and sea cucumbers, that have an internal calcareous skeleton and are often covered with spines
Endemic	A species that is native to or confined to a certain region
Environment	The surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelations (Source: ISO 14001)
Environment Regulations	OPGGS (Environment) Regulation 2009
Environmental approval	The action of approving something, which has the potential to have an adverse impact on the environment. Environmental impact assessment is generally required before environmental approval is granted.
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services (Source: HB 203:2006).
Environmental impact assessment	An orderly and systematic process for evaluating a proposal or scheme (including its alternatives), and its effects on the environment, and mitigation and management of those effects (Source: Western Australian Environmental Impact Assessment Administrative Procedures 2010)
EP	Prepared in accordance with the OPGGS (Environment) Regulations 2009, which must be assessed and accepted by the Designated Authority (NOPSEMA) before any petroleum-related activity can be performed
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999. Commonwealth legislation designed to promote the conservation of biodiversity and protection of the environment.
Epifauna	Benthic animals that live on the surface of a substrate
Fauna	Collectively, the animal life of a particular region
Flora	Collectively, the plant life of a particular region
Infauna	Aquatic animals that live in the substrate of a body of water, especially in a soft sea bottom
ISO 14001	ISO 14001 is an international standard that specifies a process (called an EMS) for controlling and improving a company's environmental performance. An EMS provides a framework for managing environmental responsibilities so they become more efficient and more integrated into overall business operations.
Likelihood	The description that best fits the chance of the selected consequence actually occurring, assuming reasonable effectiveness of the prevention and mitigation controls
MARPOL (73/78)	The International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978. MARPOL 73/78 is one of the most important international marine environmental conventions. It was designed to minimise pollution of the seas, including dumping, oil and exhaust pollution. Its stated objective is to preserve the marine environment through the complete elimination of pollution by oil and other harmful substances and the minimisation of accidental discharge of such substances.
Meteorology	The study of the physics, chemistry and dynamics of the earth's atmosphere, including the related effects at the air–earth boundary over both land and the oceans
Mitigation	Management measures that minimise and manage undesirable consequences
pH	Measure of the acidity or basicity of an aqueous solution

Term	Meaning
Protected Species	Threatened, vulnerable or endangered species that are protected from extinction by preventive measures. Often governed by special Federal or State laws.
Putrescible	Refers to food scraps and other organic waste associated with food preparation that will be subject to decay and rot (putrefaction)
Risk	The combination of the consequences of an event and its associated likelihood. For guidance, see Environmental Guidance on Application of Risk Management Procedure.
Sessile	Organism that is fixed in one place; immobile
Stereo-BRUVS	Stereo-baited remote underwater video systems
Teleost	A fish belonging to the Teleostei or Teleostomi, a large group of fishes with bony skeletons, including most common fishes. The teleosts are distinct from the cartilaginous fishes such as sharks, rays, and skates.
Zooplankton	Plankton consisting of small animals and the immature stages of larger animals

9.2 Abbreviations

Abbreviation	Meaning
µm	Micrometer
350A	350 Australia
ABF	Australian Border Force
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic Office
AIIMS	Australasian Inter-service Incident Management System
AIMS	Australian Institute of Marine Science
AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ANZECC	Australian and New Zealand Environment and Conservation Council
APPEA	Australian Petroleum Production and Exploration Association
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASAP	As soon as practicable
ATSB	Australian Transport Safety Bureau
AusSAR	Australian Search and Rescue
AUV	Autonomous Underwater Vehicle
AWR	Air Weapons Range
BIA	Biologically Important Area
BMSL	Below mean sea level
BoM	Bureau of Meteorology
CALM	Department of Conservation and Land Management
CCP	Cyclone Contingency Plan
CCWA	Conservation Council of Western Australia

Abbreviation	Meaning
CFA	Commonwealth Fisheries Association
CH4	Methane
CICC	Corporate Incident Coordination Centre
CMID	Common Marine Inspection Document
CMP	Conservation Management Plan
CMT	Crisis Management Team
CO	Carbon Monoxide
CO2	Carbon Dioxide
CS	Cost/Sacrifice
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cth	Commonwealth
CV	Construction Vessel
D&C	Drilling and Completions
DAA	Department of Aboriginal Affairs
DAFF	Department of Agriculture, Fisheries and Forestry
DAWE	Department of Agriculture, Water and the Environment
dB	Decibel
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEA	Doctors for the Environment Australia
DEWHA	Department of Environment, Water, Heritage and the Arts
DGVs	Default guideline values
DISER	Department of Industry, Science, Energy and Resources
DLV	Derrick lay vessel
DMIRS	Department of Mines, Industry Regulation and Safety
DNP	Director of National Parks
DoD	Department of Defence
DoEE	Department of the Environment and Energy
DoT	Department of Transport
DP	Dynamically Positioned
DPIRD	Department of Primary Industries and Regional Development
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EBSA	Ecologically or Biologically Significant Marine Areas
EMBA	Environment that May Be Affected
EMS	Environmental Management System
ENVID	Environmental hazard Identification
EP	Environment Plan
EPO	Environmental Performance Outcome

Abbreviation	Meaning
EPS	Environmental Performance Standard
ERM	Environmental Resource Management
ERP	Emergency Response Plans
ERT	Emergency Response Team
ESD	Ecological Sustainable Development
F	Control Feasibility
FARA	Friends of Australian Rock Art
FCG	Flooded, cleaned and gauged
FLETS	Flowline end terminations
FLNG	Floating Liquefied Natural Gas units
FPU	Floating Production Unit
g/m²	Grams per square metre
GAP	Greenpeace Australia Pacific
GHG	Greenhouse Gas
GP	Good Practice
GV	Guideline value
HCV	Heavy Construction Vessel
HF	High Frequency
HFC	Hydrofluorocarbons
HFO	Heavy Fuel Oil
HLV	Heavy lift vessel
HP	High Pressure
HSE	Health, Safety and Environment
HSP	Hydrocarbon Spill Preparedness
IAP	Incident Action Plan
IAPP	International Air Pollution Prevention
ICLDP	Incident and Crisis Leadership Development Program
IEA	International Energy Agency
IFO	Intermediate Fuel Oils
ILTs	In-Line Tees
IMCA	International Marine Contractors Association
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMMR	Inspection, Maintenance, Monitoring, Repair
IMO	International Marine Organisation
IMS	Invasive Marine Species
IMT	Incident Management Team
IPCC	Intergovernmental Panel on Climate Change
IPIECA	International Petroleum Industry Environmental Conservation Association

Abbreviation	Meaning
ISPP	International Sewage Pollution Prevention Certificate
ITF	Indonesian Through Flow
IUCN	International Union for Conservation of Nature
JRCC	Joint Rescue Coordination Centre
JSA	Job Safety Analysis
KEF	Key Ecological Feature
kHz	Kilohertz
km	Kilometre
KPI	Key Performance Indicator
L	Litres
LBL	Long Baseline
LCS	Legislation, Codes and Standards
LCV	Light Construction Vessel
LF	Low Frequency
LNG	Liquefied Natural Gas
LP	Low Pressure
LTGA	Lock the Gate
m	metre
MARPOL	International Convention for the Prevention of Pollution from Ships
MC	Measurement Criteria
MDO	Marine Diesel Oil
MEG	Mono-ethylene Glycol
MFO	Marine Fauna Observers
MGO	Marine Gas Oil
MMSI	Maritime Mobile Service Identity
MNES	Matters of National Environmental Significance
MOC	Management of Change
MODU	Mobile Offshore Drilling Unit
MPA	Marine Protected Area
MSIN	Maritime Safety Information Notifications
N2O	Nitrous Oxide
NCVA	National Conservation Values Atlas
NDC	Nationally Determined Contribution
NGERS	National Greenhouse and Energy Reporting
NIMS	Non-indigenous Marine Species
nm	Nautical mile (1,852 m) a unit of distance on the sea
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration

Abbreviation	Meaning
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NOx	Oxides of Nitrogen
NRC	North Rankin Complex
NTM	Notice to Mariners
NWMR	North-west Marine Region
NWS	North-west Shelf
NWXA	North West Exercise Area
OCIMF	Oil Companies International Marine Forum
OILMAP	Oil Spill Mapping and Analysis Program
OIW	Oil in Water
OPEP	Oil Pollution Emergency Plan
OPGGS	Offshore Petroleum and Greenhouse Gas Storage
OPP	Offshore Project Proposal
OSREC	Oil Spill Response Skills Enhancement Course
OSRO	Oil Spill Response Organisation
OSV	Offshore Supply Vessel
OVID	Offshore Vessel Inspection Database
OVMSA	Offshore Vessel Safety Management System assessment
PAA	Petroleum Activity Area
PAH	Polyaromatic Hydrocarbon
PAM	Passive Acoustic Monitoring
PAP	Petroleum Activities Program
PBA	Pre-emptive Baseline Areas
PBW	Pygmy Blue Whale
PFC	Perfluorocarbons
PJ	Professional Judgement
PLET	Pipeline End Termination
PLRs	Pig Launcher Receivers
PM10	Particulate Matter less than 10 microns
PMST	Protected Matters Search Tool
PPA	Pearl Producers Association
ppb	Parts Per Billion
ppm	Parts Per Million
PS	Performance Standards
PTS	Permanent Threshold Shift
PTW	Permit To Work
PV	Pipelay vessel

Abbreviation	Meaning
PV	Pipelay vessel
RAAF	Royal Australian Air Force
RBM	Riser base manifold
RCC	Rescue Coordination Centre
RMS	Root Mean Square
ROV	Remotely Operated Vehicle
SDA	Subsea distribution assembly
SDU	Subsea distribution units
SEEMP	Ship Energy Efficiency Management Plan
SEL	Sound exposure level
SF6	Sulphur hexafluoride
SI&TI	Seabed Intervention and Trunkline Installation
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous Operations
SMPEP	Spill Monitoring Programme Execution Plan
SO2	Sulphur Dioxide
SOLAS	Safety of Life at SEA
SOPEP	Ship Oil Pollution Emergency Plan
SPL	Sound Pressure Levels
SURF	Subsea Umbilicals Risers and Flowlines
TAP	Threat Abatement Plan
TSS	Total Suspended Solids
TTS	Temporary Threshold Shift
UK	United Kingdom
UNFCCC	United Nations Framework Convention on Climate Change
USBL	Ultra-short baseline
UTAs	Umbilical termination assemblies
UTHs	Umbilical termination heads
UXO	Unexploded Ordinance
VHF	Very high frequency
VOC	Volatile Organic Hydrocarbons
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WCC	Woodside Communication Centre
WEL	Woodside Energy Ltd
WLS	Woodside Learning Service
WMS	Woodside Management System
Woodside	Woodside Energy Ltd

Abbreviation	Meaning
WSR	Woodside Site Representative

APPENDIX A: WOODSIDE ENVIRONMENT AND BIODIVERSITY POLICY

WOODSIDE POLICY Woodside Energy

Environment and Biodiversity Policy

OBJECTIVE

Woodside recognises the intrinsic value of nature and the importance of conserving biodiversity and ecosystem services to support the sustainable development of our society. We are committed to doing our part. We understand and embrace our responsibility to undertake activities in an environmentally sustainable way.

PRINCIPLES

Woodside commits to:

- Implementing a systematic approach to the management of the impacts and risks of our operating activities on an ongoing basis, including emissions and air quality, discharge and waste management, water management, biodiversity and protected areas.
- Applying the mitigation hierarchy principle (avoid, minimise, restore) and a continuous improvement approach to ensure we maintain compliance, improve resource use efficiency and reduce our environmental impacts.
- Embedding environmental and biodiversity management, and opportunities, in our business planning and decision making processes.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Not undertaking new exploration or development of hydrocarbons within the boundaries of natural sites on the UNESCO World Heritage List (as specified at 1 December 2022). Existing activity may continue if compatible with maintenance of the listed outstanding universal values.
- Not undertaking new exploration or development of hydrocarbons within IUCN Protected Areas (as specified at 1 December 2022) unless compatible with management plans in place for the area. Existing activity may continue if compatible with management plans in place for the area.
- Achieving net zero deforestation1 associated with new projects that take a Final Investment Decision (FID) after 1 December 2022.
- Developing Biodiversity Action Plans for all new major projects (CAPEX >USD$2 billion) that take a FID after 1 December 2022.
- Supporting positive biodiversity outcomes in regions and areas in which we operate.
- Setting targets and publicly reporting on our environmental and biodiversity performance.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Approved by the Woodside Energy Group Ltd Board in December 2022.

[1] Definition of Forest: 'trees higher than 5 meters and a canopy cover of more than 10 percent on the land to be cleared'

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APPENDIX B: RELEVANT REQUIREMENTS

The table below refers to Commonwealth Legislation related to the activity

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	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.
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.

Commonwealth Legislation	Legislation Summary
Industrial Chemicals (Notification and Assessment Act) 1989 • Industrial Chemicals (Notification and Assessment) Regulations 1990	This Act creates a national register of industrial chemicals. The Act also provides for restrictions on the use of certain chemicals which could have harmful effects on the environment or health.
National Environment Protection Measures (Implementation) Act 1998 • National Environment Protection Measures (Implementation) Regulations 1999	This Act and Regulations provide for the implementation of National Environment Protection Measures (NEPMs) to protect, restore and enhance the quality of the environment in Australia and ensure that the community has access to relevant and meaningful information about pollution. The National Environment Protection Council has made NEPMs relating to ambient air quality, the movement of controlled waste between states and territories, the national pollutant inventory, and used packaging materials.
National Greenhouse and Energy Reporting Act 2007 • National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015	This Act and associated Rule establishes the legislative framework for the NGER scheme for reporting greenhouse gas emissions and energy consumption and production by corporations in Australia.
Navigation Act 2012 • Marine order 12 – Construction – subdivision and stability, machinery and electrical installations • Marine order 30 - Prevention of collisions • Marine order 47 – Offshore Industry units • Marine order 57 - Helicopter operations • Marine order 91 - Marine pollution prevention—oil • Marine order 93 - Marine pollution prevention—noxious liquid substances • Marine order 94 - Marine pollution prevention—packaged harmful substances • Marine order 96 - Marine pollution prevention—sewage • Marine order 97 - Marine pollution prevention—air pollution	This Act regulates navigation and shipping including Safety of Life at Sea (SOLAS). The Act will apply to some activities of 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 2009 • 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.

Commonwealth Legislation	Legislation Summary
Protection of the Sea (Powers of Intervention) Act 1981	This Act authorises the Commonwealth to take measures for the purpose of protecting the sea from pollution by oil and other noxious substances discharged from ships and provides legal immunity for persons acting under an AMSA direction.
Protection of the Sea (Prevention of Pollution from Ships) Act 1983 • Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994 • Marine order 91 - Marine pollution prevention—oil • Marine order 93 - Marine pollution prevention—noxious liquid substances • Marine order 94 - Marine pollution prevention—packaged harmful substances • Marine order 95 - Marine pollution prevention—garbage • Marine order 96 - Marine pollution prevention—sewage *Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007* MARPOL Convention	This Act relates to the protection of the sea from pollution by oil and other harmful substances discharged from ships. Under this Act, discharge of oil or other harmful substances from ships into the sea is an offence. There is also a requirement to keep records of the ships dealing with such substances. The Act applies to all Australian ships, regardless of their location. It applies to foreign ships operating between 3 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.

APPENDIX C: EPBC ACT PROTECTED MATTERS SEARCH

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.

EMBA- Subsea

Report created: 15-Mar-2023

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	36
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:	1
Listed Marine Species:	88
Whales and Other Cetaceans:	33
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	8
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:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	162
Key Ecological Features (Marine):	8
Biologically Important Areas:	14
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
The Ningaloo Coast	WA	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Natural		
The Ningaloo Coast	WA	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
EEZ and Territorial Sea
Extended Continental Shelf

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 canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may 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

Scientific Name	Threatened Category	Presence Text
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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may 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	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
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

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may 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
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
REPTILE		
Aipysurus apraefrontalis		
Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama		
Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Centrophorus zeehaani Southern Dogfish, Endeavour Dogfish, Little Gulper Shark [82679]	Conservation Dependent	Species or species habitat likely 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 may occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely 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]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely 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
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

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
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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	Congregation or aggregation known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis		
Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

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 may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	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
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour may occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Foraging, feeding or related behaviour likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Stercorarius skua as Catharacta skua Great Skua [823]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely 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
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 likely to occur within area
Reptile		
[Acalyptophis peronii](#) Horned Seasnake [1114]		Species or species habitat may occur within area
[Aipysurus apraefrontalis](#) Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
[Aipysurus duboisii](#) Dubois' Seasnake [1116]		Species or species habitat may occur within area
[Aipysurus eydouxii](#) Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
[Aipysurus foliosquama](#) Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
[Aipysurus laevis](#) Olive Seasnake [1120]		Species or species habitat may occur within area
[Aipysurus tenuis](#) Brown-lined Seasnake [1121]		Species or species habitat may occur within area
[Astrotia stokesii](#) Stokes' Seasnake [1122]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli Small-headed Seasnake [75601]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Leioselasma czeblukovi as Hydrophis czeblukovi		
Fine-spined Seasnake, Geometrical Seasnake [87374]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Pelamis platurus		
Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis		
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Indopacetus pacificus Longman's Beaked Whale [72]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima as Kogia simus Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Orcaella heinsohni as Orcaella brevirostris Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
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 as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
[Tursiops aduncus](#) Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
[Tursiops truncatus s. str.](#) Bottlenose Dolphin [68417]		Species or species habitat may occur within area
[Ziphius cavirostris](#) Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Abrolhos	Habitat Protection Zone (IUCN IV)
Carnarvon Canyon	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Gascoyne	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)

Habitat Critical to the Survival of Marine Turtles		
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

Scientific Name	Behaviour	Presence
Nov-Feb		
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Action clearly unacceptable			
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development	2003/1294	Controlled Action	Post-Approval
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
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
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Not controlled action			
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
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
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	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
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
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey	2012/6296	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		(Particular Manner)	
2D seismic survey	2008/4493	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 Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D sesmic survey	2006/2781	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
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
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
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)	
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
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
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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
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
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
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
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

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
Sovereign 3D Marine Seismic Survey	2011/5861	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
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 three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 Seismic Survey	2008/4219	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed

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

Name	Region
Glomar Shoals	North-west
Wallaby Saddle	North-west
Western demersal slope and associated fish communities	South-west

Biologically Important Areas		
Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Onychoprion fuscata Sooty Tern [82847]	Foraging	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		

Scientific Name	Behaviour	Presence
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]	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.

Operational Area- Subsea

Report created: 13-Mar-2023

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:	14
Listed Migratory Species:	26

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:	17
Whales and Other Cetaceans:	25
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:	18
Key Ecological Features (Marine):	1
Biologically Important Areas:	1
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
EEZ and Territorial Sea

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 canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may 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	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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	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
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat may 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
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area
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	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 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	Species or species habitat likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		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]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus		
White-tailed Tropicbird [1014]		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
Reptile		
Aipysurus laevis		
Olive Seasnake [1120]		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
Disteira kingii		
Spectacled Seasnake [1123]		Species or species habitat may occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Pelamis platurus		
Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
[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	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
[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

Current Scientific Name	Status	Type of Presence
Kogia sima as Kogia simus 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]		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
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
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

Current Scientific Name	Status	Type of Presence
Steno bredanensis Rough-toothed Dolphin [30]		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
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
CGGVERITAS 2010 2D Seismic Survey	2010/5714	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
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	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
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region

Name	Region
Exmouth Plateau	North-west

Biologically Important Areas

Scientific Name	Behaviour	Presence
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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APPENDIX D: OIL SPILL PREPAREDNESS AND RESPONSE MITIGATION ASSESSMENT

Oil Spill Preparedness and Response Mitigation Assessment for the WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan

Corporate HSE
Hydrocarbon Spill Preparedness

May 2023
Revision 0

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FIGURES

TABLES

EXECUTIVE SUMMARY

Woodside Energy Scarborough Pty Ltd (Woodside) has developed its oil spill preparedness and response position for the WA-61-L and WA-62-L Subsea Infrastructure Installation, 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 Acceptable levels. It achieves this by evaluating response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the Environment Plan (EP). This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness.

A summary of the key facts and references to additional detail within this document are presented below.

Table 0-1: Summary of the key details for assessment

Key details of assessment	Summary	Reference to additional detail
Worst Case Credible Scenario	**Hydrocarbon release caused by vessel collision** Instantaneous surface release of 1000 m^3 of marine diesel[1].	**Section 2.2**
Hydrocarbon Properties	Under constant 5 kn wind conditions approximately 45% of the oil is predicted to evaporate within 24 hours. The majority of remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes. Under variable wind conditions where winds are of a greater strength, more entrainment of oil into the water column is predicted (about 45% after 24 hours). A further 35% is forecast to evaporate, leaving only a small proportion of the oil floating on the water surface (<1%). It is predicted only 50 m^3 of product would remain after weathering from the marine diesel scenario and there is no predicted shoreline contact or accumulation.	Section 6.8.2 of the EP Appendix A of the First Strike Plan
Modelling Results	A quantitative, stochastic assessment has been undertaken for the credible worst case spill scenario to help assess the environmental risk of a hydrocarbon spill. A total of 100 replicate simulations were completed for the scenarios to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter. The stochastic modelling did not predict the threshold concentrations required to trigger deterministic modelling. Deterministic modelling was therefore not undertaken and stochastic modelling has been used to scale the response.	**Section 2.3**

[1] Modelling for an instantaneous surface release of 2000 m^3 MDO was available at the same field location. It was originally undertaken in 2019 and reprocessed in 2021 using NOPSEMA's contemporary modelling thresholds. The largest tank of the vessel proposed for the activity is circa 1000 m^3, 50% smaller than the modelled MDO volume (2000 m^3). Given that spill parameters and geographic location fall within the envelope of the existing MDO modelling, it is an appropriate surrogate and therefore additional modelling was not required.

Key details of assessment	Summary		Reference to additional detail
	Minimum time to shoreline contact (above 100 g/m^2)	No contact at threshold	
	Largest volume ashore at any single Response Priority Area (RPA) (above 100 g/m^2)	No contact at threshold	
	Largest total shoreline accumulation (above 100 g/m^2) all shorelines	No contact at threshold	
Net Environmental Benefit Analysis	Monitor and evaluate, source control via vessel SOPEP and oiled wildlife response are all identified as potentially having a net environmental benefit (dependent on the actual spill scenario) and carried forward for further assessment.		**Section 4**
ALARP evaluation of selected response techniques	The evaluation of the selected response techniques shows the proposed controls reduced the risk to an ALARP and Acceptable level for the risk presented in **Section 2**, without the implementation of considered additional, alternative or improved control measures.		**Section 6**

1 INTRODUCTION

1.1 Overview

Woodside Energy Scarborough Pty Ltd (Woodside) has developed its oil spill preparedness and response position for the Scarborough WA-61-L and WA-62-L Subsea Infrastructure Installation, 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 2009* (Environment Regulations) relating to hydrocarbon spill response arrangements.

- The WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan (EP)
- Oil Pollution Emergency Arrangements (OPEA) (Australia)
- The WA-61-L and WA-62-L Subsea Infrastructure Installation Oil Pollution Emergency Plan (OPEP) including
    - First Strike Plan (FSP)
    - Relevant Operations Plans
    - Relevant Tactical Response Plans (TRPs)
    - Relevant Supporting Plans
    - Data Directory.

The purpose of this document is to demonstrate that the risks and impacts from an unplanned hydrocarbon release and the associated response operations are controlled to As Low as Reasonably Practicable (ALARP) and Acceptable levels.

1.3 Scope

This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to ALARP and Acceptable levels. It achieves this by evaluating response options to address the potential environmental risks and impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP. This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness. It should be read in conjunction with the documents listed in **Table 1-1**. The location of the PAP is shown in Figure 3-1 of the EP.

1.4 Oil spill response document overview

The documents outlined in **Table 1-1** and **Figure 1-1** are collectively used to manage the preparedness and response for a hydrocarbon release.

The Oil Pollution First Strike Plan (FSP) contains a pre-operational Net Environmental Benefit Analysis (NEBA) summary, outlining the selected response techniques for this PAP. Relevant Operational Plans to be initiated for associated response techniques are identified in the FSP and relevant forms to initiate a response are appended to the FSP.

The process to develop an Incident Action Plan (IAP) begins once the Oil Pollution FSP is underway. The IAP includes inputs from the Monitor and Evaluate (ME) operations and the operational NEBA (**Section 4**). Planning, coordination and resource management are initiated by the Incident

Management Team (IMT). In some instances, technical specialists may be utilised to provide expert advice. The planning may also involve liaison officers from supporting government agencies.

During each operational period, field reports are continually reviewed to evaluate the effectiveness of response operations. In addition, the operational NEBA is continually reviewed and updated to ensure the response techniques implemented continue to result in a net environmental benefit (**Section 4**).

The response will continue as described in **Section 5** until the response termination criteria have been met.

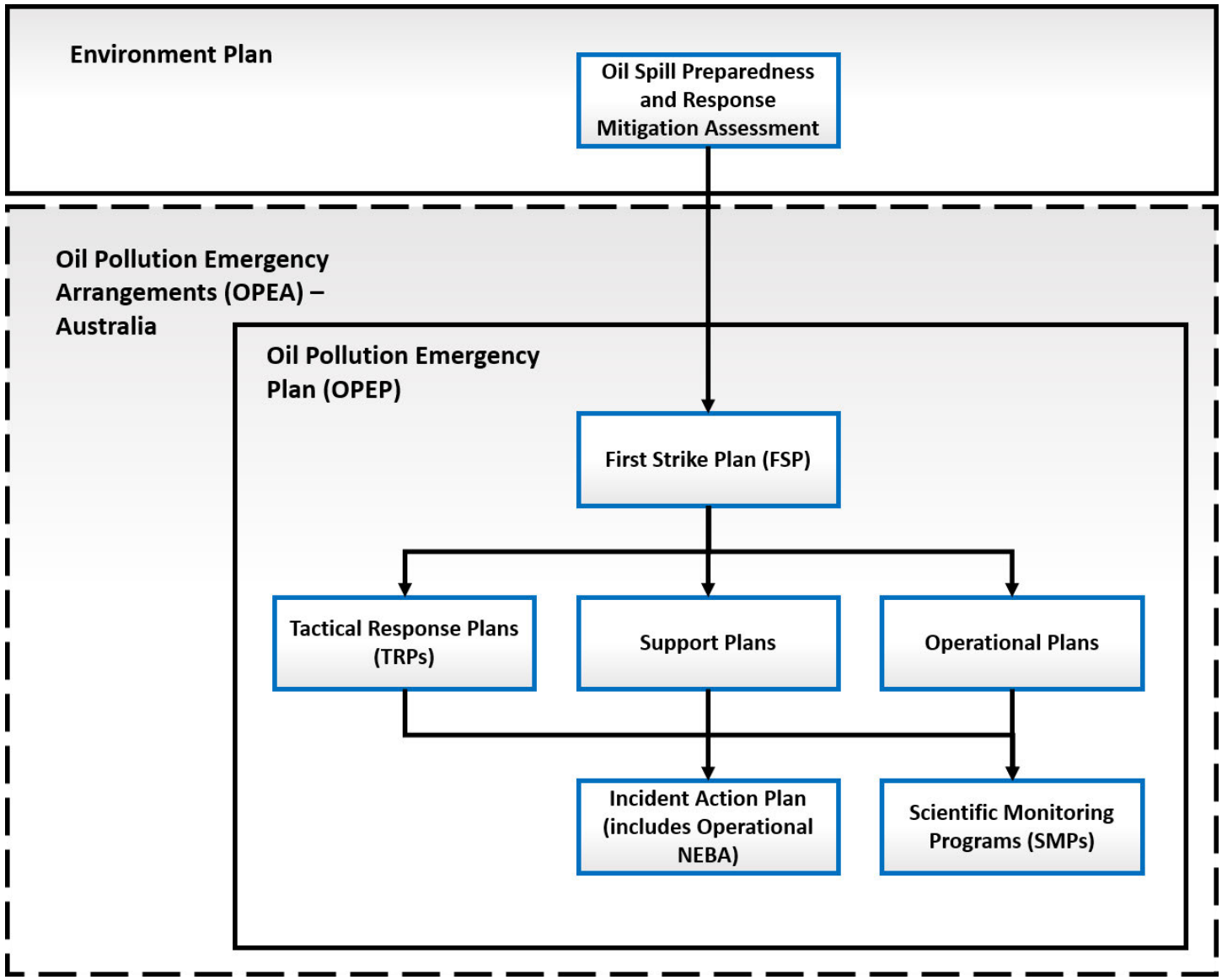

Figure 1-1: Woodside hydrocarbon spill document structure

Table 1-1: Hydrocarbon spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document name/reference
WA-61-L and WA-62-L Subsea Infrastructure Installation EP	Demonstrates that potential adverse impacts on the environment associated with the WA-61-L and WA-62-L Subsea Infrastructure Installation (during both routine and non-routine operations) are mitigated and managed to ALARP and will be of an acceptable level.	NOPSEMA Woodside internal	EP Section 6 (Identification and evaluation of environmental risks and impacts, including credible spill scenarios) EP Section 6 (Performance outcomes, standards and measurement criteria) EP Section 7 (Implementation strategy – including emergency preparedness and response) EP Section 7 (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 WA-61-L and WA-62-L Subsea Infrastructure Installation (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.	N/A
WA-61-L and WA-62-L Subsea Infrastructure Installation Oil	Facility specific document providing details and tasks required to mobilise a first strike response.	Site-based IMT for initial response, activation and notification.	Initial notifications and reporting required within the first 24 hours of a spill event.	

Document	Document overview	Stakeholders	Relevant information	Document name/reference
Pollution First Strike Plan	Primarily applied to the first 24 hours of a response until a full IAP specific to the event is developed. Oil Pollution First Strike Plans are intended to be the first document used to provide immediate guidance to the responding Incident Management Team (IMT).	CIMT for initial response, activation and notification. CIMT: Control function in an ongoing spill response for activity-specific response information.	Relevant spill response options that could be initiated for mobilisation in the event of a spill. Recommended pre-planned tactics. Details and forms for use in immediate response. Activation process for oil spill trajectory modelling, aerial surveillance and oil spill tracking buoy details.	
Operational Plans	Lists the actions required to activate, mobilise and deploy personnel and resources to commence response operations. Includes details on access to equipment and personnel (available immediately) and steps to mobilise additional resources depending on the nature and scale of a release. Relevant operational plans will be initially selected based on the Oil Pollution First Strike Plan; additional operational plans will be activated depending on the nature and scale of the release.	CIMT: Operations and Logistics functions for first strike activities. CIMT: Planning Function 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 Vessel Shipboard Oil Pollution Emergency Plan (SOPEP) Oiled Wildlife

Document	Document overview	Stakeholders	Relevant information	Document name/reference
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 Function to help develop IAPs, and Logistics Function to assist with determining resources required.	Indicative response techniques. Access requirements and/or permissions. Relevant information for undertaking a response at that site. Where applicable, may include equipment deployment locations and site layouts.	For full list of relevant Tactical Plans, refer to ANNEX E: Tactical Response Plans.
Support Plans	Support Plans detail Woodside's approach to resourcing and the provision of services during a hydrocarbon spill response.	CIMT: Operations, Logistics and Planning functions.	Technique for mobilising and managing additional resources outside of Woodside's immediate preparedness arrangements.	Marine Logistics People & Global Capability Surge Labour Requirement Plan Health & Safety Aviation IT Response Plan Communications Response Plan Stakeholder Engagement Accommodation & Catering Waste Management Guidance for Oil Spill Claims Management Security Support Plan Hydrocarbon Spill Responder Health Monitoring Guideline

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 WA-61-L and WA-62-L Subsea Infrastructure Installation First Strike Plan 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.

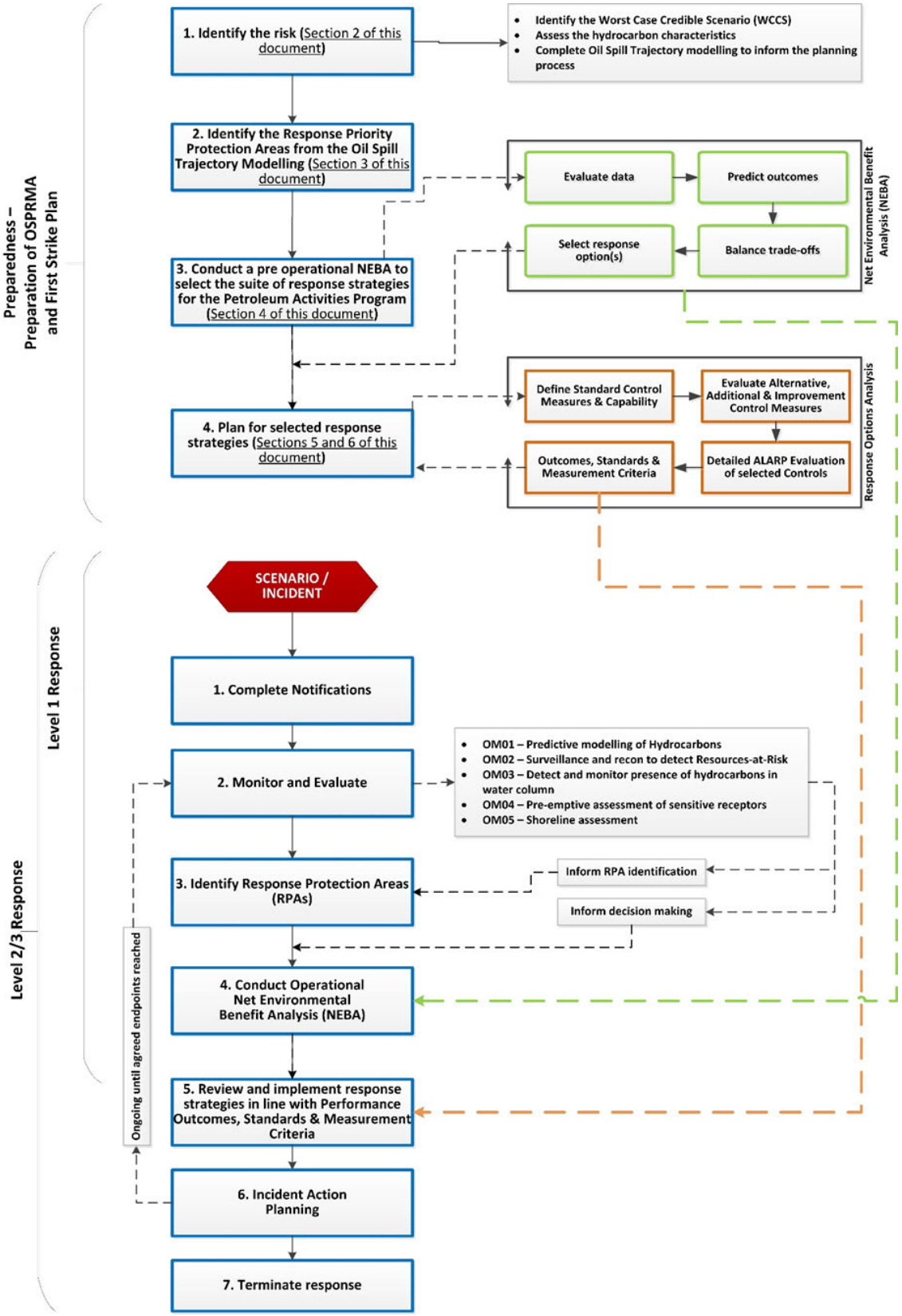

Figure 2-1: Response planning and selection process

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 >100g/m^2.

Section 4. NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

- pre-operational NEBA (during planning/ALARP evaluation): this must be reviewed during the initial response to an incident to ensure its accuracy
- selected response techniques prioritised and carried forward for ALARP assessment.

Section 5. HYDROCARBON SPILL ALARP PROCESS

- determines the response need based on predicted consequence parameters.
- details the environmental performance of the selected response options based on need.
- sets the environmental performance outcomes, environmental performance standards and measurement criteria.

Section 6. ALARP EVALUATION

- evaluates alternative, additional, and improved options for each response technique to demonstrate the risk has been reduced to ALARP.
- provides a detailed ALARP assessment of selected control measure options against:
  - predicted cost associated with implementing the option
  - predicted change to environmental benefit
  - predicted effectiveness / feasibility of the control measure.

Section 7. ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

- evaluation of impacts and risks from implementing selected response options.

Section 8. ALARP CONCLUSION

Section 9. ACCEPTABILITY CONCLUSION

2.1.1 Response Planning Assumptions

For the purpose of defining terms related to response planning and timing, the following definitions have been developed.

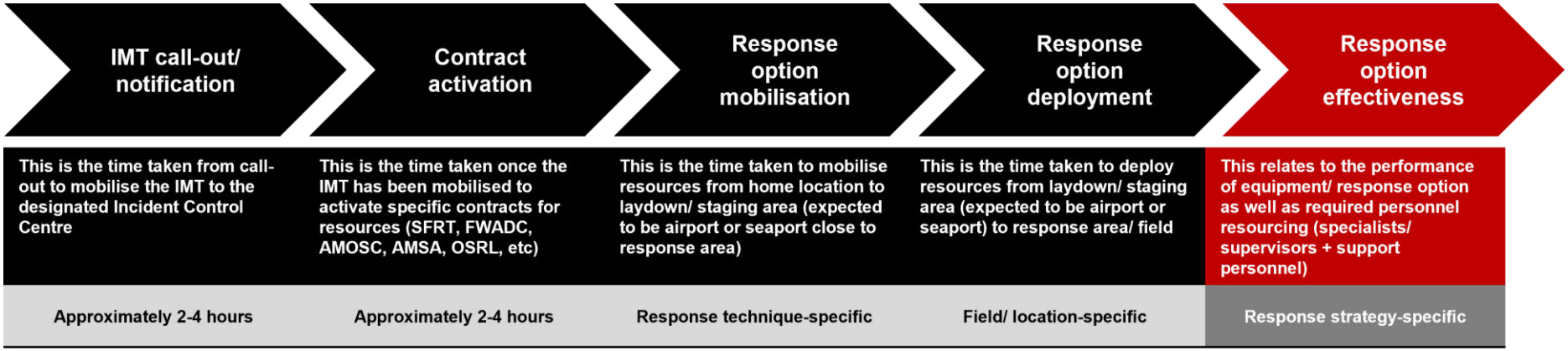

Figure 2-2: Response Planning Assumption - Timing, Resourcing and Effectiveness

2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the PAP have been identified during the risk assessment process (Section 6 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 6 of the EP. Three 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.

The surface release of marine diesel caused by vessel collision (Credible Scenario-01; CS-01) has been modelled and considered for response planning purposes. Credible Scenario-02 (CS-02) and Credible Scenario-03 (CS-03) have significantly smaller marine diesel release volumes and are considered to be within the risk profile and spill response capability requirements of CS-01.

CS-01 is therefore selected for response planning purposes.

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 (HC) type	Residual proportion	Residual volume (liquid m^3)
Credible Scenario-01 (Worst Case)	Yes	Hydrocarbon release due to vessel collision	Instantaneous release of 1000 m^3 marine diesel [2]	2	Marine diesel	5%	50 m^3
Credible Scenario-02	No	Hydrocarbon release due to vessel collision	Instantaneous release of 250 m^3 marine diesel	2	Marine diesel	5%	12.5 m^3
Credible Scenario-03	No	Marine Fuel Loss during bunkering	Instantaneous release of 55 m^3 marine diesel	1	Marine diesel	5%	0.4 m^3

[2] Modelling for an instantaneous surface release of 2000 m^3 MDO was available at the same field location. It was originally undertaken in 2019 and reprocessed in 2021 using NOPSEMA's contemporary modelling thresholds. The largest tank of the vessel proposed for the activity is circa 1000 m^3, 50% smaller than the modelled MDO volume (2000 m^3). Given that spill parameters and geographic location fall within the envelope of the existing MDO modelling, it is an appropriate surrogate and therefore additional modelling was not required.

2.2.1 Hydrocarbon characteristics

Hydrocarbon characteristics, including modelled weathering data and ecotoxicity, are included in Section 6 of the EP.

Marine Diesel

Marine Diesel Oil is typically classed as an International Tanker Owners Federation (ITOPF) Group I/II oil.

Marine diesel is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. Under constant 5 kn wind conditions, approximately 45% of the oil is predicted to evaporate within 24 hours. Under these calm conditions the majority of the remaining oil on the water surface will weather at a slower rate due to being comprised of the longer-chain compounds with higher boiling points. Evaporation of the residual compounds will slow significantly, and they will then be subject to more gradual decay through biological and photochemical processes. Under variable wind conditions where winds are of a greater strength, more entrainment of oil into the water column is predicted (about 45% after 24 hours). A further 35% is forecast to evaporate, leaving only a small proportion of the oil floating on the water surface (<1%).

The heavier (low volatility) components of the oil have a tendency to entrain into the upper water column due to wind-generated waves but can subsequently resurface if wind-waves abate. Therefore, the heavier components of this oil can remain entrained or on the sea surface for an extended period, with associated potential for dissolution of the soluble aromatic fraction. It is predicted only 50 m^3 of product would remain after weathering from the marine diesel scenario and there is no predicted shoreline contact or accumulation.

2.3 Hydrocarbon spill modelling

Oil spill trajectory modelling tools are used for environmental impact assessment and during response planning to understand spatial scale and timeframes for response operations. Woodside recognises that there is a degree of uncertainty related to the use of modelling data and has subsequently utilised conservative approaches to volumes, weathering, spatial areas, timing and response effectiveness to scale capability to need.

The Oil Spill Model and Response System (OILMAP) and Integrated Oil Spill Impact Model System (SIMAP) models are used for stochastic 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 impact 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. 2007s, 2007b; 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 Natural Resource Damage Assessment (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

Stochastic modelling of a 2000 m^3 surface release of marine diesel was available for Woodside's Scarborough Project, conducted in 2019 for the scenario outlined in **Table 2-1**. The release location used for the spill modelling is within the Operational Area (19° 53' 54.72" S, 113° 14' 19.56" E). The modelled spill volume of 2000 m^3 is more than fifty percent greater than the worst-case credible release volume of 1000 m^3 for this EP. However, the results of the modelling can be used to demonstrate that a much larger marine diesel spill in the vicinity of the Operational Area has an Environment that May Be Affect (EMBA) that is not predicted to include any surface slicks above threshold volumes entering WA state waters, or any shoreline contact or accumulation. Basing the impact assessment for a vessel collision scenario on this modelling is considered highly conservative and consequently, the EMBA for a 1000 m^3 surface release of marine diesel within the Operational Area would be considerably smaller than the EMBA described in this EP.

A quantitative, stochastic assessment has been undertaken for the credible spill scenario to help assess the environmental consequences of a hydrocarbon spill.

A total of 100 replicate simulations were completed for the scenario to test for trends and variations in the trajectory and weathering of the spilled oil over an annual period, with an even number of replicates completed using samples of metocean data that commenced within each month. Further details relating to the assessments for the scenario can be found in Section 6 of the EP.

2.3.1.1 Environmental impact thresholds – 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 Environment that

May Be Affected (EMBA) and is discussed further in Section 4 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 contact 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 of marine diesel to determine the EMBA and environmental impacts

Threshold (marine diesel)	Description
10 g/m^2	Surface hydrocarbon
100 ppb	Entrained hydrocarbon (ppb)
50 ppb	Dissolved aromatic hydrocarbon (ppb)
100 g/m^2	Shoreline accumulation

2.3.2 Deterministic Modelling

Deterministic modelling is undertaken where initial stochastic modelling has indicated that floating oil is present at an impact threshold of 50 g/m^2 and/or where there is shoreline accumulations at an impact threshold of 100 g/m^2. The deterministic modelling outputs are then used to scale the required capability for the offshore (containment and recovery and dispersant) and/or shoreline responses.

The selected stochastic modelling used as a representative of the WCCS for this PAP did not predict the threshold concentrations required to trigger the undertaking of deterministic modelling. Deterministic modelling was therefore not undertaken for CS-01 and stochastic modelling has been used to scale the response.

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 SMP, however they do not appropriately represent the thresholds at which an effective response can be implemented. Additional response thresholds are used for response planning and to determine areas where response techniques would be most effective. The spill modelling results are then used to assess the nature and scale of a response.

In the event of an actual response, existing modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform Incident Management Team decisions.

The spill modelling outputs are presented at response planning thresholds for surface hydrocarbons for the WCCS. Surface spill concentrations are expressed as grams per square metre (g/m^2) (**Section 2.2**). The thresholds used are derived from oil spill response planning literature and industry guidance and are summarised below.

2.3.4 Surface Hydrocarbon Concentrations

Table 2-3: Surface hydrocarbon thresholds for response planning

Surface hydrocarbon concentration (g/m^2)	Description	Bonn Agreement Oil Appearance Code (BAOAC)	Mass per area (g/m^2)
>10	Predicted minimum threshold for commencing operational monitoring [3]	Code 3 – Dull metallic colours	5 - 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [4]	Code 4 – Discontinuous true oil colour	50 - 200
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application	Code 5 – Continuous true oil colour	>200
Shoreline hydrocarbon concentration (g/m^2)	**Description**	**National Plan Guidance on Oil Contaminated Foreshores**	**Mass per area (g/m^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 - 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. Additionally, the recommended rate of application for surface dispersant is typically 1-part dispersant to 20 or 25 parts of spilled oil. These figures assume a 0.1 mm slick thickness, averaged over the thickest part of the spill, to 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 AMSA (AMSA, 2015) indicates that 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 that 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).

[3] Operational monitoring will be undertaken from the outset of a spill whether or not this threshold has been reached. Monitoring is needed throughout the response to assess the nature of the spill, track its location and inform the need for any additional monitoring and/or response techniques. It also informs when the spill has entered State Waters and control of the incident passes to Western Australia Department of Transport (WA DoT).

[4] At 50 g/m^2, containment and recovery and surface dispersant application operations are not expected to be particularly effective. This threshold represents a conservative approach to planning response capability and containing the spread of surface oil.

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (Discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

Spraying areas of oil designated as BAOAC Code 5 with dispersant (Continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant. Repeated application of these areas of thicker oil, or increased dosage ratios, will be required to achieve the recommended treatment rate of dispersant (EMSA 2012).

Guidance from the National Oceanic and Atmospheric Administration (NOAA) in the United States is found in the document: *Characteristics of Response Techniques: 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 that 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 that in terms of oil spill response, sheen can be disregarded as it represents a negligible quantity of oil, cannot be recovered or otherwise dealt with to a significant degree by existing response techniques, and is likely to dissipate readily and naturally (ITOPF, 2014).

Figure 2-3 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 50g/m^2 was chosen as an average / equilibrium thickness (50g/m^2 is an average is 50% coverage of 0.1mm Bonn Agreement Code 4 - discontinuous true oil colour, or 25% coverage of 0.2mm Bonn Agreement Code 5 – continuous true oil colour which would represent small patches of thick oil or wind-rows).

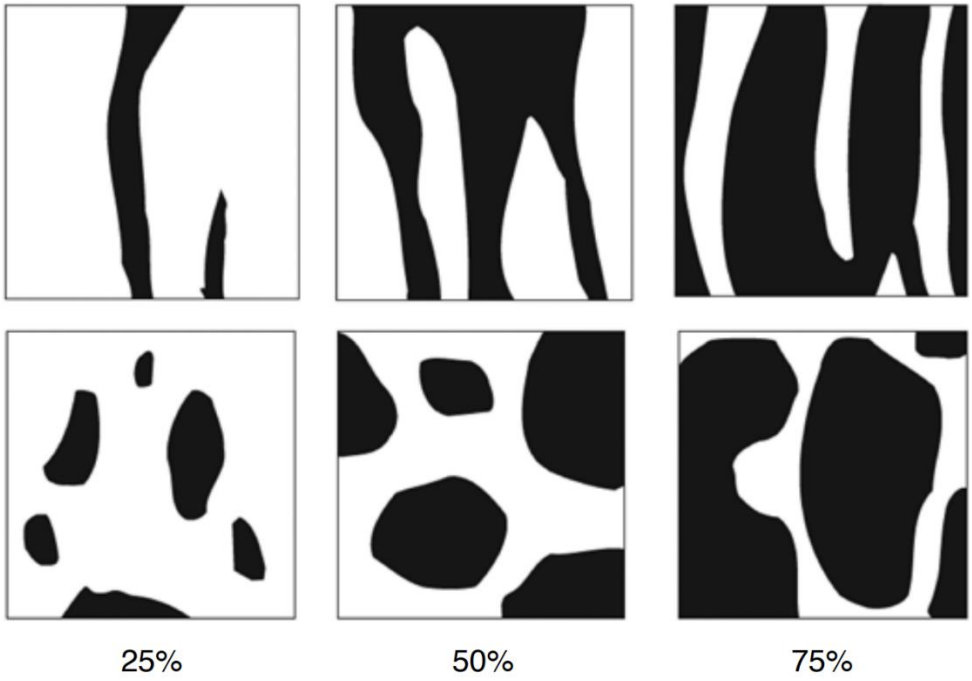

Figure 2-3: Proportion of total area coverage (AMSA, 2014)

Figure 2-4 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.

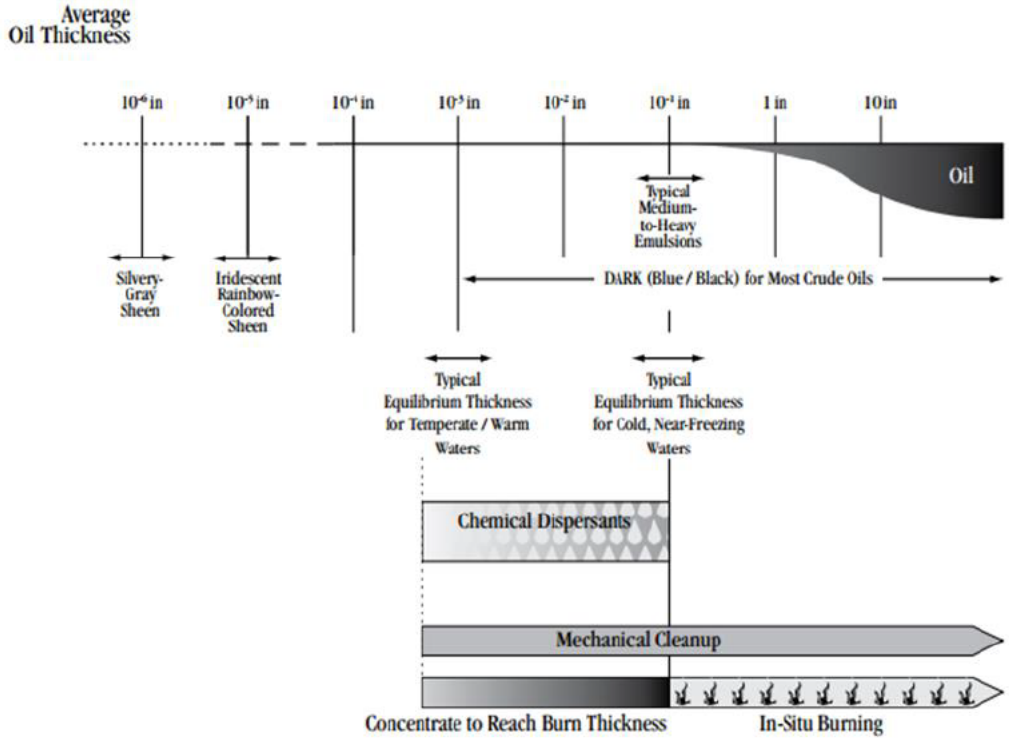

Figure 2-4: Oil thickness versus potential response options (from Allen and Dale 1996)

Wind and waves influence the feasibility of mechanical clean-up operations, dropping the effectiveness significantly because of entrainment and/or splash-over as short period waves develop beyond two to three feet (0.6–0.9m) in height. Waves and wind can also be limiting factors for the safe operation of vessels and aircraft. There is also potential secondary contamination of unimpacted areas and waste issues associated with mechanical dispersion of slicks (**Table 4-2 and Section 4.2.3.3**).

2.3.5 Surface Hydrocarbon Viscosity

Table 2-4: Surface hydrocarbon viscosity thresholds

Surface viscosity (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	500-5000
15,000	Predicted maximum viscosity for effective surface dispersant operations	Sometimes possible to disperse	5,000-15,000

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.s (1,000 – 2,000 cSt) and then declining to a low level with an oil viscosity of 15,000 mPa.s (15,000 cSt). It was considered

that some generally applicable viscosity limit, such as 2,000 or 5,000 mPa.s (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.s (5,000 cSt) or more, and their performance gradually decreases with increasing viscosity; oils with a viscosity of more than 15,000 are, in most cases, no longer dispersible. Guidance from CEDRE (EMSA, 2012) also indicates that products with a range of 500 – 5,000 cSt at sea temperature are generally possible to disperse, while 5,000 – 15,000 cSt at sea temperature above pour point are sometimes possible to disperse, with products beyond 15,000 cSt at sea temperature below pour point are generally impossible to disperse. The potential use of dispersants is evaluated in **Table 4-2**.

To support decision making and response planning, a threshold of 15,000 cSt at sea temperature was chosen as a conservative estimate of maximum viscosity for surface dispersant spraying operations.

The thresholds described above are compared with the modelling results for the WCCS (**Table 2-5**).

2.3.6 Spill modelling results

Details of the scenario and modelling inputs are included along with results in **Table 2-5.**

The selected results used to represent the WCCS are based on response thresholds:

- Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a threshold of 100 g/m^2).
- Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m^2).
- Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor.
- Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (including those contacted at <100 g/m^2 accumulation concentration).
- Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb/50 ppb).

The volumes as presented in **Table 2-5** are the worst case volumes resulting from the selected stochastic modelling and have been used to determine appropriate level of response.

As noted, the modelled volume selected (2000 m^3) is nearly double the volume of the PAP diesel scenario volume (1000 m^3) and thus it is concluded that thresholds would be unlikely to be met for the actual scenario for this PAP.

Table 2-5: Worst case credible scenario modelling results

Response parameter	Modelled result
	Marine diesel release caused by vessel collision
Maximum instantaneous liquid hydrocarbon release rate and duration	Instantaneous surface release of 1000 m^3 marine diesel.
Maximum residual surface hydrocarbon after weathering	50 m^3
Modelling results	
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a threshold of 100 g/m^2)	No contact at threshold
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m^2)	64 hours at Gascoyne AMP
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor	No contact at threshold
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (including those contacted at <100 g/m^2 accumulation concentration)	No contact at threshold
Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb/50 ppb)	61 hours at Gascoyne AMP

The stochastic modelling results for the WCCS have been used as the basis for response planning and are included in **Section 4.2.**

The stochastic modelling results for Credible Scenario-01 are summarized as follows:

- Surface hydrocarbon concentrations greater than 10 g/m^2 may occur up to 113 km from the release location.
- Floating oil at the 10 g/m^2 threshold is predicted to arrive at the surface waters of the Gascoyne AMP receptor with a probability of 1% after 64 hours.
- No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds.
- No accumulation of oil on shorelines is predicted.
- The Gascoyne AMP is predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 10% after 61 hours.
- Spreading and weathering of the surface oil occurs rapidly due to the loss of light, volatile components and the spreading. Dispersant application and containment and recovery are not appropriate for use on spills of marine diesel due to these weathering characteristics.

3 IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

In a response, operational monitoring programs – including trajectory modelling and vessel/aerial observations – would be used to predict RPAs that may be impacted. For the purposes of planning and appropriately scaling a response, modelling has been used to identify RPAs as outlined below in **Figure 3-1**.

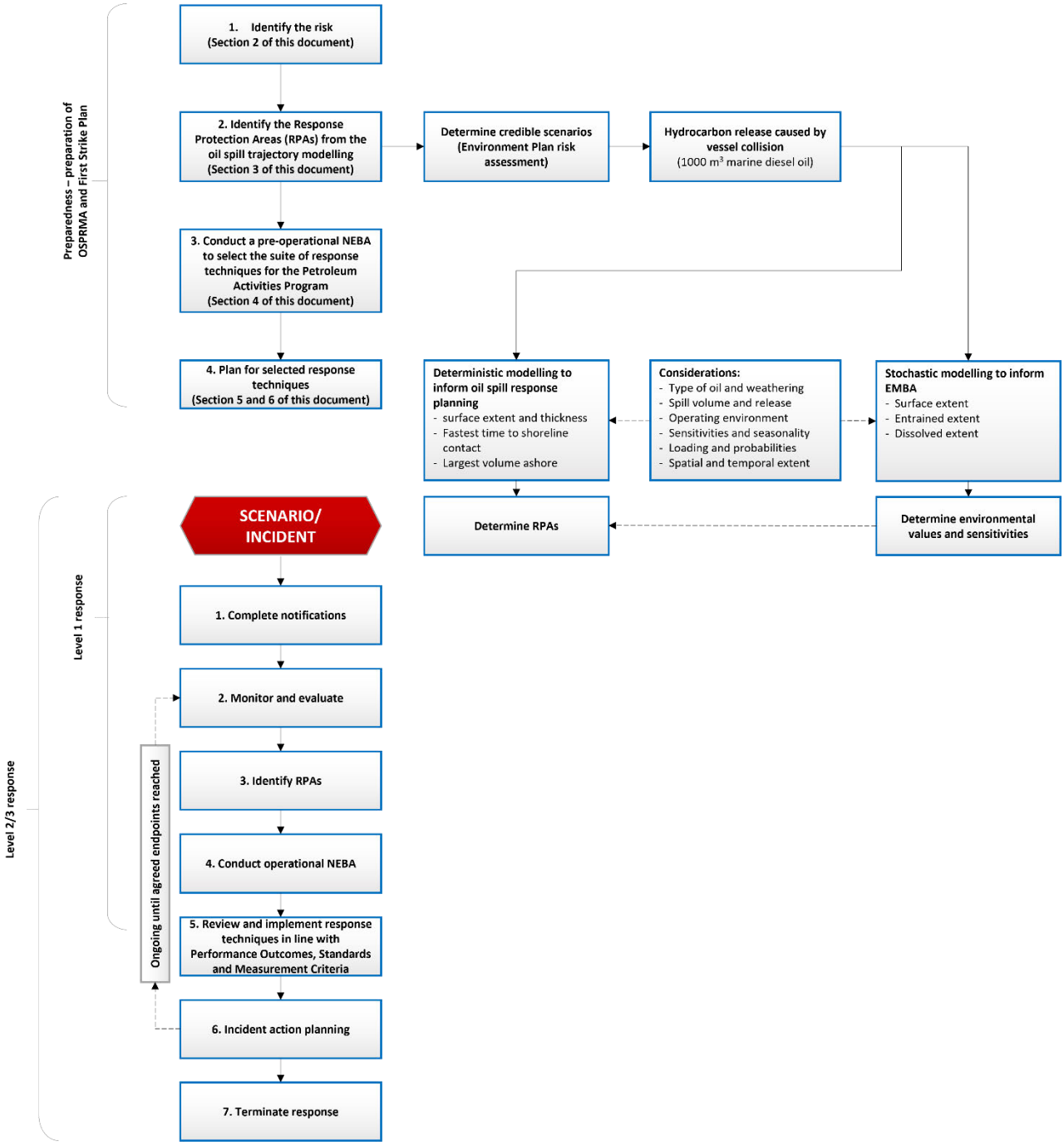

Figure 3-1: Identify Response Protection Areas (RPAs) flowchart

3.1 Identified sensitive receptor locations

Section 6 of the EP includes the list of sensitive receptor locations that have been identified by stochastic modelling as meeting the requirements outlined below:

- receptors with the potential to incur surface, entrained or shoreline accumulation contact above environmental impact thresholds
- 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)

From the identified sensitive receptors described in Section 6 of the EP, only those which a shoreline response could feasibly be conducted (accumulation > 100 g/m^2 for shoreline assessment and/or contact with surface slicks >10 g/m^2 for operational monitoring[5]) have been selected for response planning purposes.

3.2.1 Response Protection Areas (RPAs)

RPAs are selected on the basis of their environmental ecological, social, economic, cultural and heritage values and sensitivities and the ability to conduct a response based on the minimum response thresholds (**Section 2.3.3**). The Gascoyne AMP is the only RPA identified as the WCCS is predicted by modelling to be limited to offshore open waters. Contact from floating hydrocarbons above 10 g/m^2 is predicted to arrive at the surface waters of the Gascoyne AMP with a probability of 1% after 64 hours based on the stochastic modelling selected for this PAP. The Gascoyne AMP is predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 10% after 61 hours. The maximum entrained oil concentration is forecast as 7.2 ppm within the Gascoyne AMP.

No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds. Additionally, modelling shows there is no accumulation of oil on shorelines is predicted.

During a spill event, operational monitoring techniques (OM01, OM02, OM03, OM04 and OM05) would be deployed from the outset of the spill to track the spill trajectory and deduce if any RPAs are at risk of impact. TRPs will be drafted in advance for any RPAs with a contact time of <14 days.

Any additional sensitive receptors are presented in the existing environment description (Section 4 of the EP) and impact assessment section (Section 6 of the EP) for the spill scenario. The pre-operational NEBA (**Section 4**) considers the results from the stochastic modelling to ensure all feasible response techniques are considered in the planning phase, therefore additional receptors are also included in the pre-operational NEBA.

[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/or control of the incident passes to statutory authorities e.g. WA DoT or AMSA.

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.

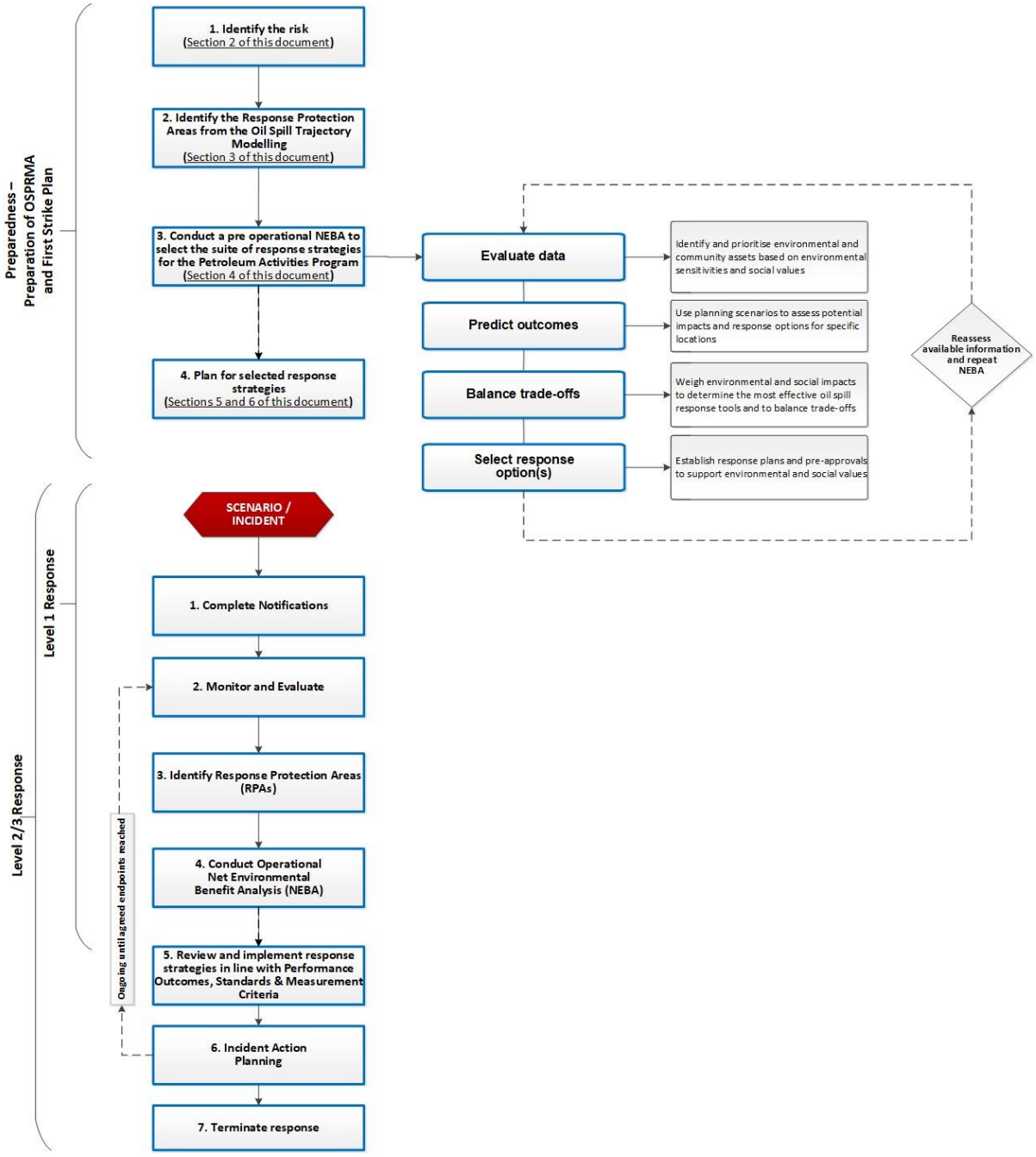

Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

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 2.3.1.1**) and the surface concentrations from the modelling.

Completing a pre-operational NEBA is a key response planning control that reduces the environmental risks and impacts of implementing the selected response techniques. Comprehensive details of the pre-operational NEBA for this PAP are contained in **ANNEX A**: Net Environmental Benefit Analysis detailed outcomes.

4.2 Stage 1: Evaluate data

Woodside identifies and prioritises environmental and community assets based on environmental sensitivities and social values, informed through the use of trajectory modelling. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial area that may be potentially impacted by the PAP activities.

4.2.1 Define the scenario(s)

Woodside uses scenarios identified from the risk assessment in the EP to assess potential impacts and response options for specific locations. Modelling of the WCCS is then 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 modelling results are then used to assess the feasibility/effectiveness and scale of the response.

Table 4-1: Scenario summary information (WCCS)

Scenario summary information (WCCS– Credible scenario-01)	
Scenario	Hydrocarbon release caused by marine vessel collision
Location	19° 53' 54.72" S, 113° 14' 19.56" E
Oil Type	Marine diesel
Volume and duration of release	Instantaneous release of 1000 m^3

4.2.1.1 Hydrocarbon characteristics

Marine Diesel

Marine Diesel is typically classed as an International Tanker Owners Pollution Federation (ITOPF) Group I/II oil.

Marine diesel is a mixture of volatile and persistent hydrocarbons with low proportions of highly volatile and residual components. Under constant 5 kn wind conditions, about 6% of the oil mass is predicted to evaporate within the first 12 hours (BP < 180 °C); a further 35% should evaporate within the first 24 hours (180 °C < BP < 265 °C); and a further 54% should evaporate over several days (265 °C < BP < 380 °C). Approximately 5% of the oil is shown to be persistent. The aromatic content of the oil is approximately 3%. Under variable wind conditions where winds are of a greater strength, more entrainment of oil into the water column is predicted (about 45% after 24 hours). A further 35% is forecast to evaporate, leaving only a small proportion of the oil floating on the water surface (<1%).

The heavier (low volatility) components of the oil have a tendency to entrain into the upper water column due to wind-generated waves but can subsequently resurface if wind-waves abate. Therefore, the heavier components of this oil can remain entrained or on the sea surface for an extended period, with associated potential for dissolution of the soluble aromatic fraction.

Stochastic modelling results for WCCS Credible Scenario-01	
Minimum time to shoreline contact (above 100 g/m^2)	No contact at threshold
Largest volume ashore at any single RPA (above 100 g/m^2)	No contact at threshold
Largest total shoreline accumulation (above 100g/m^2)	No contact at threshold

4.2.2 Determining potential response options

The available response techniques based on current technology can be summarised under the following headings:

- Monitor and evaluate (including operational monitoring)
- Source control
  - vessel source control
  - remotely operated vehicle (ROV) intervention
  - debris clearance and/or removal
  - capping stack
  - containment dome
  - relief well drilling
- Surface dispersant application:
  - aerial dispersant application
  - vessel dispersant application
- Containment and recovery
- Mechanical dispersion
- In-situ burning
- Shoreline protection and deflection
- Shoreline clean-up:
  - Phase 1 – Mechanical clean-up
  - Phase 2 – Manual clean-up
  - Phase 3 – Final polishing
- Oiled wildlife response (including hazing)
- Waste management
- Post spill monitoring/scientific monitoring

An assessment of which response options are feasible for the scenarios is included below in **Table 4-2.** These options are evaluated against each scenario's parameters including oil type, volume and characteristics, prevailing weather conditions, logistical support, and resource availability to determine their deployment feasibility.

A shortlist of the feasible response options is then carried forward for the ALARP assessment with a justification for the exclusion of other response techniques included in **Section 4.2.3**. This assessment will typically result in a range of available options, that are deployed at different areas (at-source, offshore, nearshore and onshore) and times through the response. The NEBA process assists in prioritising which options to use where and when and timings throughout the response.

Table 4-2: Response technique evaluation – Surface Release

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Marine Diesel				
Monitor and Evaluate	Will be effective in tracking the location of the spill, predicting potential impacts and triggering further monitoring and response techniques as required. Monitoring techniques include: • OM01 Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. • OM02 Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. • OM03 Monitoring of hydrocarbon presence, properties, behaviour and weathering in water – from outset of spill. • OM04 Pre-emptive assessment of sensitive receptors at risk – triggered once OM01, OM02 and OM03 inform likely RPAs at risk. • OM05 Shoreline assessment – once OM02, OM03 and OM04 inform which RPAs have been impacted.	Monitoring of a Marine Diesel spill is a feasible response technique and outputs will be used to guide decision making on the use of other monitoring/response techniques and providing information to regulatory agencies including AMSA and WA DoT.	**Yes**	Monitoring the spill will be necessary to: • Validate trajectory and weathering models • Determine the behaviour of the oil in water • Determine the location and weathering condition of the slick • Provide forecasts of spill trajectory • Determine appropriate response techniques • Determine effectiveness of response techniques • Confirm impact pathways to receptors
Source Control (vessel)	Controlling the spill of diesel at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	A spill of diesel from a vessel collision will be instantaneous and source control will be limited to what the vessel can achieve whilst responding to the incident.	**Yes**	Ability to stop the spill at source will be dependent upon the specific spill circumstances and whether or not it is safe for response personnel to access/isolate the source of the spill.
Surface Dispersant Application	Dispersants are not considered effective when applied on thin surface films such as marine diesel as the dispersant droplets tend to pass through the surface films without binding to the hydrocarbon.	Marine diesel is prone to rapid spreading and evaporation thus the use of dispersant would be deemed an unnecessary response technique.	**No**	The application of dispersant to marine diesel is unnecessary as the diesel will rapidly evaporate and would thus unnecessarily introduce additional chemical substances to the marine environment. The additional entrainment would also increase exposure of subsea species and habitats to hydrocarbons.
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. Containment and recovery requires a spill to be BAOAC 4 or 5 with a 50-100% coverage of 100 g/m^2 to 200 g/m^2.	Marine diesel is prone to rapid spreading and evaporation thus reducing the feasibility of containment and recovery as a response technique.	**No**	Containment and recovery would be an inappropriate response technique as the coverage requirements would not be achieved by a marine diesel spill. In addition, most of the spilled diesel would have been subject to rapid evaporation and entrainment prior to the commencement of containment and recovery operations.
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 is also likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	**No**	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
In-situ Burning	In-situ burning is only effective where minimum slick thickness can be achieved.	Use of in-situ burning as a response technique for marine diesel is unfeasible as the minimum slick thickness cannot be attained due to rapid spreading. In addition, there is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which is unlikely to be	**No**	Diesel characteristics are not appropriate for the use of in-situ burning as the minimum thickness will not be attained due to rapid spreading. Furthermore, it would unnecessarily cause an increase in the release of atmospheric pollutants.

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
		achieved. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel.		
Shoreline Protection and Deflection	Shoreline protection and deflection can be effective at preventing contamination of at-risk areas.	Use of shoreline protection and deflection for a spill of marine diesel is unlikely to provide any significant environmental benefit as the diesel will be subject to rapid spreading and evaporation prior to contact with any sensitive areas. The modelling undertaken predicts no shoreline receptors are to be contacted by floating oil concentrations at any of the assessed thresholds and no accumulation of oil on shorelines, therefore shoreline protection and deflection does not require consideration.	**No**	The modelling undertaken predicts that no shorelines will be impacted thus it is unlikely that this technique would be required.
Shoreline Clean up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	A marine diesel spill would be prone to rapid spreading and evaporation prior to impacting any sensitive receptors. Operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time. The modelling undertaken predicts no shoreline receptors are to be contacted by floating oil concentrations at any of the assessed thresholds and no accumulation of oil on shorelines, therefore shoreline protection and deflection does not require consideration.	**No**	The modelling undertaken predicts that no shorelines will be impacted thus it is unlikely that this technique would be required.
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.	Due to the likely volatile atmospheric conditions surrounding a diesel spill, response options would be limited to hazing to ensure the safety of response personnel. In addition, any rehabilitation could only be undertaken by trained specialists.	**Yes**	The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. However, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken as and where required.

4.2.3 Exclusion of response techniques

Response techniques that are not feasible for the worst case scenario (Credible Scenario-01) for the WA-61-L and WA-62-L Subsea Infrastructure Installation are detailed in the subsections below and are excluded from further assessment within this document.

4.2.3.1 Surface Dispersant Application

Marine diesel is prone to rapid spreading and evaporation thus the use of dispersant would be deemed an unnecessary response technique. The application of dispersant to marine diesel is unnecessary as the diesel will rapidly evaporate and would thus unnecessarily introduce additional chemical substances to the marine environment. The additional entrainment would also increase exposure of subsea species and habitats to hydrocarbons.

4.2.3.2 Containment and Recovery

Marine diesel is prone to rapid spreading and evaporation thus reducing the feasibility of containment and recovery as a response technique. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel. Although this scenario results in surface oil of BAOAC 4, this only occurs within the first few hours during which time volatile levels would be very high and unsafe for response personnel.

4.2.3.3 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. The volatile nature of the oil is likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. There are also secondary contamination and waste issues to consider.

4.2.3.4 In-situ Burning

This technique requires calm sea state conditions as is required for containment and recovery operations, which limits its feasibility in the offshore waters of the Operational Area. Optimum weather conditions are <20 knot wind speed and waves <1 to 1.5 m with oil collected to a minimum 3mm thick layer. Due to the conditions in Operational Area it is expected that the ability to contain oil may be limited as the sea state may exceed the optimum conditions. It is preferable that oil is fresh and does not emulsify to maximise burn efficiency and reduce residue thickness.

There are health and safety risks for response personnel associated with the containment and subsequent burning of hydrocarbons. It is also suggested that the residue from attempts to burn would sink, thereby posing a risk to the environment. The longer-term effects of burn residues on the marine environment are not fully understood and therefore, no assessment of the potential environmental impact can be determined. Furthermore, it is unlikely that MDO would achieve the required thickness for in-situ burning, rendering this an unsuitable method.

Until further operational and environmental information becomes available, Woodside will not consider this option.

4.2.3.5 Shoreline Protection and Deflection and Clean Up

Hydrocarbon spill modelling conducted for this activity does not predict shoreline contact at response thresholds (>100 g/m^2). Shoreline protection and deflection and shoreline clean-up are therefore not deemed feasible.

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 modelling results 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.**

Table 4-3: Selection and prioritisation of response techniques

Response planning scenario	Key characteristics for response planning (times are minimum times to contact for first receptor and/or shoreline contacted above response threshold)	Feasibility of response techniques									Outline response technique
		Monitor and evaluate	Source control (vessel)	Surface dispersant application	Containment and recovery	Mechanical dispersion	In situ burning	Shoreline protection and deflection	Shoreline clean-up	Oiled wildlife response	
Credible Scenario-01: Release of up to 1000 m^3 marine diesel from a vessel collision	No shoreline contact predicted. The Gascoyne AMP is predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 10%, and surface oil at the 10 g/m^2 threshold with a probability of 1%.	**Yes**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	Monitor and evaluate. Initiate vessel source control if feasible. Plan for oiled wildlife response and implement if oiled wildlife is observed.

From the NEBA undertaken on the WCCS identified the primary response techniques are;

- Monitor and evaluate
- Source control on the vessel
- Oiled wildlife response

Support techniques may include:

- Waste management
- Scientific monitoring

5 HYDROCARBON SPILL ALARP PROCESS

Woodside's hydrocarbon spill ALARP process is aligned with guidance provided by NOPSEMA in *Oil Spill Risk Management Guidance Note N-04750-GN1488* (2021) and is set out in the 'Woodside Hydrocarbon Spill Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) Development Guidelines'.

From the identified response planning need and pre-operational NEBA/SIMA, Woodside conducts a structured, semi-quantitative hydrocarbon spill process which has the following steps:

1. considers the Response Planning Need identified in terms of surface area (km^2) and available surface hydrocarbon volumes (m^3) against existing Woodside capability
2. considers alternative, additional, and improved options for each response technique/control measure by providing an initial and, if required, detailed evaluation of:
    - predicted cost associated with adopting the control measure
    - predicted change/environmental benefit
    - predicted effectiveness/feasibility of the control measure.
3. evaluates the risks and impacts of implementing the proposed response techniques, and any further control measures with associated environmental performance to manage these additional risks and impacts.

Woodside considers the risks and impacts from a hydrocarbon spill to have been reduced to ALARP when:

1. a structured process for identifying and considering alternative, additional, and improved options has been completed for each selected response technique
2. the analysis of alternate, additional, and improved control measures meets one of the following criteria:
    - all identified, reasonably practicable control measures have been adopted; or
    - no identified reasonably practicable additional, alternative and/or improved control measures would provide further overall increased proportionate environmental benefit; or
    - no reasonably practical additional, alternative, and/or improved control measures have been identified.
3. where an alternative, additional and/or improved control measure is adopted, a measurable level of environmental performance has been assigned
4. higher order impacts/ risks have received more comprehensive alternative, additional, and improved control measure evaluations and do not just compare the cost of the adopted control measures to the costs of an extreme or clearly unreasonable control measure
5. cumulative effects have been analysed when considered in combination across the whole activity.

The response technique selection is based on the risk assessment conducted in the EP. The risk assessment identifies the type of oil, volume of release, duration of release, predicted fate, weathering and the EMBA (along with other requirements such as time to impact and predicted volumes ashore). Modelling is then used to inform the NEBA and the prioritisation of suitable response options. The scale of the response techniques selected in the pre-operational NEBA is informed through the assessment of results from 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: Net Environmental Benefit Analysis detailed outcomes.

5.1 Monitor and Evaluate (including operational monitoring)

Monitor and evaluate includes the gathering and evaluation of data to inform the oil spill response planning and operations. It includes fate and trajectory modelling, spill tracking, weather updates and field observations. This response option is deployed in some capacity for every event.

Table 5-1 below provides the operations monitoring plans that support the successful execution of this response technique.

Table 5-1: Description of supporting operational monitoring plans

ID	Title
OM01	Predictive modelling of hydrocarbons to assess resources at risk
OM02	Surveillance and reconnaissance to detect hydrocarbons and resources at risk
OM03	Monitoring of hydrocarbon presence, properties, behaviour and weathering in water
OM04	Pre-emptive assessment of sensitive receptors at risk
OM05	Shoreline assessment

Woodside maintains an *Operational Monitoring Operational Plan*. If shoreline contact is predicted, RPAs will be identified and assessed before contact. If shorelines are contacted, a shoreline assessment survey will be completed to guide effective shoreline clean-up operations. This plan includes the process for the IMT to mobilise resources depending on the nature and scale of the spill.

The proximity of Exmouth, Onslow and 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 Exmouth. However, in the unlikely event of an extended spill with potential to impact receptors further afield, monitoring activities may also be mobilised from Onslow and Karratha.

5.1.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- Modelling of floating oil indicates that concentrations equal to or greater than the 10 g/m^2, 50 g/m^2 and 100 g/m^2 thresholds could potentially be found, in the form of slicks, up to 113 km, 60 km and 58 km from the spill site, respectively.
- No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds.
- No accumulation of oil on shorelines is predicted.
- The time to contact for oil at concentrations of entrained hydrocarbons greater than 100 ppb at shoreline receptors is 61 hours at the Gascoyne AMP.
- Arrangements for support organisations who provide specialist services or resources should be tested regularly.
- Plans, procedures and support documents need to be in place for Operational and Support functions. These should be reviewed and updated regularly.

5.1.2 Environmental performance based on need

Table 5-2: Environmental Performance – Monitor and Evaluate

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.7)**
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/vessel and ready for deployment 24/7	1, 3A, 3C, 4
		2.2	Deploy tracking buoy from facility 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 COP daily to improve the accuracy of other monitor and evaluate techniques.	1, 3B, 4
3	Satellite imagery	3.1	Contract in place with 3rd party provider to enable access and analysis of satellite imagery. Imagery source/type requested on activation of service.	1, 3C, 4
		3.2	3rd party provider will confirm availability of an initial acquisition within 2 hours.	1, 3B, 3C, 4
		3.3	First image received with 24 hours of Woodside confirming to 3rd party provider its acceptance of the proposed acquisition plan.	1
		3.4	3rd party provider to submit report to Woodside per image. Report is to include a polygon of any possible or identified slick(s) with metadata.	1
		3.5	Data received to be uploaded into Woodside COP daily to improve accuracy of other monitor and evaluate techniques.	1, 3B, 4
		3.6	Satellite Imagery services available and employed during response.	1, 3C, 4
4	Aerial surveillance	4.1	At least 2 trained aerial observers available to be deployed by day 1 from resource pool.	1, 2, 3B, 3C, 4
		4.2	1 aircraft available for two sorties per day, available for the duration of the response from day 1	1, 3C, 4
		4.3	Observer to compile report during flight as per first strike plan. 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 pre-emptive assessments as contingency if required.	1, 2
5		5.1	Activate 3rd party service provider as per first strike plan. Deploy resources within 3 days:	1, 2, 3C, 3D, 4

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.7)**
	Hydrocarbon detections in water		• 3 specialists in water quality monitoring • 2 monitoring systems and ancillaries • 1 vessel for deploying the monitoring systems with a dedicated winch, A-frame or Hiab and ancillaries to deploy the equipment.	
		5.2	Water monitoring services available and employed during response.	1, 3C, 4
		5.3	Preliminary results of water sample as per contractor's implementation plan within 7 days of receipt of samples at the accredited lab.	
		5.4	Daily fluorometry reports as per service provider's implementation plan will be provided to IMT to validate modelling and monitor presence/absence of entrained hydrocarbons.	
		5.5	Use of Autonomous Underwater Vehicles (AUVs) for hydrocarbon presence and detection may be used as a contingency if the operational NEBA confirms conventional methods are unsafe or not possible.	1, 2, 3C, 4
6	Pre-emptive assessment of sensitive receptors	6.1	10 days prior to any predicted impact, in agreement with WA DoT (for Level 2/3 incidents), deployment of 2 specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4
		6.2	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
7	Management of environmental impact of the response risks	7.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic 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

The control measures and capability of Woodside and its third-party service providers are shown to support Monitor and Evaluate activities up to and including the identified WCCS. This is demonstrated by the following:

- Woodside has a documented, structured and tested capability for Monitor and Evaluate operations including internal trajectory modelling capabilities, tracking buoys located offshore and contracted aerial observation platforms with access to trained observers.
- Woodside and its third-party service providers ensure there is sufficient capability for the duration of the response.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in **Section 6.1.**
- 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 environmental benefit gained and/or not reasonably practicable for this PAP.

- The Monitor and Evaluate capability outlined in this section is part of the response developed to manage potential risks and impacts associated with the scenarios to ALARP, and there are no further additional, alternative and improved control measures other than those implemented that would provide further benefit.

5.2 Source Control via Vessel SOPEP

Vessel source control will be conducted, where feasible and in accordance with MARPOL 73/78 Annex I, by the Vessel Master under the Shipboard Oil Pollution Emergency Plan (SOPEP) triggered by any loss of containment from the PAP vessels.

The SOPEP provides guidance to the Master and Officers on board the vessel with respect to the extra steps to be taken when an unexpected pollution incident has occurred or is likely to occur. The SOPEP contains all information and operational instructions required by IMO Resolution MEPC.54 (32) adopted on 6 March 1992, as amended by resolution MEPC.86 (44) adopted on 13 March 2000.

Its purpose is to set in motion the necessary actions to stop or minimise oil discharge and mitigate its effects and outlines responsibilities, pollution reporting requirements, procedures and resources needed in the event of a hydrocarbon spill from vessel activities.

In the event of a potential vessel collision, the vessel master may engage precautionary marine manoeuvres to avoid collision or commence pumping operations to transfer marine diesel and thus minimise the release.

5.2.1 Environmental performance based on need

Woodside has established control measures, environmental performance outcomes, performance standards and measurement criteria to be used for vessel-source oil spill response during the PAP which are detailed in Section 6.8 of the EP. The vessel master's roles and responsibilities are described in EP Section 7.3**.**

Performance standards for each contracted PAP vessel are detailed in the vessel's specific SOPEP.

These standards ensure that sufficient resources are available and are adequately tested to ensure implementation of the SOPEP in the event of a hydrocarbon spill.

5.3 Oiled wildlife response

Oiled wildlife response (OWR) includes wildlife surveillance/ reconnaissance, wildlife hazing, pre-emptive capture, and the capture, cleaning, treatment, and rehabilitation of animals that have been oiled. In addition, it includes the collection, post-mortem examination, and disposal of deceased animals that have succumbed to the effects of oiling.

For a petroleum activity spill in Commonwealth waters, Woodside is required to take the role of Control Agency and will be responsible for the wildlife response. In such circumstances, Woodside would implement a response in accordance with the *Oiled Wildlife Operational Plan*, the WA Oiled Wildlife Response Plan (WAOWRP) (DBCA, 2022a) and the WA OWR Manual (DBCA, 2022b). The *Oiled Wildlife Operational Plan* includes the process for the 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 Biodiveristy, Conservation and Attractions (DBCA).

The key plan for OWR in WA is the WAOWRP (DBCA, 2022a). The WAOWRP establishes the framework for preparing and responding to potential or actual wildlife impacts during a spill and sets out the management arrangements for implementing an OWR in conjunction with the DoT *State Hazard Plan – Maritime Environmental Emergencies* (SHP-MEE). It is the responsibility of DBCA to administer the WAOWRP under the direction of the DoT. The WA OWR Manual (DBCA, 2022b) supports, and should be used in conjunction with, the WAOWRP. The purpose of the WA OWR Manual is to standardise the operating procedures, protocols and processes for an OWR during a spill event in WA waters, and to create alignment between the wildlife response processes and the overall incident response (DBCA, 2022b).

If a spill occurs in WA State waters or enters State waters, DBCA is the Jurisdictional Authority for wildlife, and for level 2/3 spills, will also lead the oiled wildlife response under the control of the DoT. DBCA is the State Government agency responsible for administering the *Biodiversity Conservation Act 2016 (BC Act)*, which has provisions for authorising activities that affect wildlife.

For level 1 spills in State waters, Woodside is required to take the role of Control Agency, including for wildlife response. It is, however, also an expectation that for level 2/3 petroleum activity spills, Woodside will conduct the initial first-strike response actions for wildlife response and continue to manage those operations until DBCA is activated as the lead agency for wildlife response and formal handover occurs. Following formal handover, Woodside will function as a support organisation for the OWR and will be expected to continue to provide planning and resources as required.

Woodside retains specialist personnel to support and manage oiled wildlife operations, including trained and competent responders for deployment in Exmouth and Dampier. Additional personnel would be sourced through Woodside's arrangements to support an oiled wildlife response as required.

5.3.1 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 5-3 outlines the wildlife response priority areas for this activity. At the time of a spill, identification and allocation of wildlife response priority areas should also take into consideration any key biological activities. Additional detail regarding species and their key biological activities within the vicinity of the PAP are described in Section 4 of the *WA-61-L and WA-62-L Subsea Infrastructure Installation EP*.

For WA, the Pilbara and Kimberley Regional Oiled Wildlife Plans (DBCA [formerly Department of Parks and Wildlife), 2014) provide useful information relating to wildlife priority response areas in their respective regions.

Table 5-3: Key at-risk species potentially in Priority Protection Areas and open ocean

Species	Open ocean	Gascoyne AMP
Marine turtles (including foraging and inter-nesting areas and significant nesting beaches)	✓	✓
Whale sharks (migration to and from waters at Ningaloo)	✓	✓
Seabirds and/or migratory shorebirds	✓	✓
Cetaceans – migratory whales	✓	✓
Cetaceans – dolphins and porpoises	✓	✓
Sea snakes	✓	✓

The following statements identify the key parameters upon which a wildlife response need can be based:

- Floating oil at >10 g/m^2 is predicted at Gascoyne AMP within 64 hour for CS-01.
- There is no predicted shoreline accumulation at response thresholds (>100 g/m^2).
- At sea there are likely to be low numbers of at risk or impacted wildlife, and limited opportunities to rescue wildlife, given the distribution and behaviour of animals in the open marine environment. At sea, continued wildlife reconnaissance, carcass recovery, sampling of carcasses that cannot be retrieved and scientific monitoring are more likely to be the focus of response efforts.
- As the surface oil approaches shorelines and as oil accumulates on the shoreline, potential for oiled wildlife impacts are likely to increase as well as opportunities to rescue wildlife.
- It is estimated that the wildlife impact would be between medium and high, as defined in the WAOWRP (DBCA, 2022a) (**Table 5-4)**.

Table 5-4: 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.

5.3.2 Environmental performance based on need

Table 5-5: Environmental Performance – Oiled Wildlife Response

Environmental Performance Outcome		Oiled Wildlife Response is conducted in accordance with the Western Australian Oiled Wildlife Response Plan (WAOWRP, 2022) to ensure it is conducted in accordance with legislative requirements to house, release or euthanise wildlife under the *Biodiversity Conservation Act 2016*.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.7)**
8	Wildlife response arrangements	8.1	Oiled Wildlife Operational Plan in place and utilised during a response to plan, coordinate, implement and terminate operations	1, 3A, 4
		8.2	Initiate a wildlife first strike response 5 days prior to confirmed or imminent wildlife contact as directed by relevant Operational Monitoring techniques (OM01-05) and in liaison with DBCA	1
9	Wildlife response equipment	9.1	Maintain contract with AMOSC for immediate access to oiled wildlife response equipment.	1, 3C, 3D, 4
		9.2	Maintain contract with OSRL to access additional oiled wildlife response equipment.	1, 3C, 3D, 4
10	Wildlife responders	10.1	Two Oiled Wildlife Team Members to supervise the oiled wildlife operations who have completed an Oiled Wildlife Response Management course.	1, 2, 3B
		10.2	Maintain contract with AMOSC for immediate access to trained oiled wildlife response specialists	1, 3B, 3C
		10.3	Maintain contract with OSRL to access additional trained oiled wildlife response specialists	1, 3B, 3C
		10.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
11	Management of environmental impacts of response risks	11.1	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 including mobilisation of operational monitoring (OM01-05) to identify wildlife and RPAs contacted or at imminent risk of contact by hydrocarbons.
- Availability and mobilisation of trained OWR personnel to supervise OWR activities.
- Access to wildlife resources (personnel and equipment) to meet the needs where there are medium or high levels of wildlife impact.

5.4 Waste Management

Waste management is considered a support technique to oiled wildlife response, containment and recovery and shoreline clean-up. For the purposes of this OSPRMA, waste management may be required to support wildlife response. Waste generated and collected during the response that will require handling, management and disposal may consist of:

- Liquids (hydrocarbons and contaminated liquids) collected during wildlife response, and/or
- Solids/semi-solids (oily solids, garbage, contaminated materials) and debris collected during wildlife response.

Expected waste volumes during an event are likely to vary depending on oil type, volume released, response techniques employed and extent of weathering of hydrocarbons. Waste management, handling and capacity should be scalable to ensure continuous response operations can be maintained.

All waste management activities will follow the Environment Protection (Controlled Waste) Regulations 2004 and the waste will be managed to minimise final disposal volumes. Waste treatment techniques will consider contaminated solids treatment to allow disposal to landfill and solids with high concentrations of hydrocarbon will be treated and recycled where possible or used in clean fill if suitable.

The waste products would be transported from response locations to the nearest suitable staging area/waste transfer station for treatment, disposal or recycling. Waste will be transferred with appropriately licensed vehicles. Containers will be available for temporary waste storage and will be:

- labelled with the waste type
- provided with appropriate lids to prevent waste being blown overboard
- bunded if storing liquid wastes.
- processes will be in place for transfers of bulk liquid wastes and include:
  - inspection of transfer hose undertaken prior to transfer
  - watchman equipped with radio visually monitors loading hose during transfer
  - tank gauges monitored throughout operation to prevent overflow

The *Oil Spill Preparedness Waste Management Support Plan* details the procedures, capability and capacity in place between Woodside and its primary waste services contractor (Veolia Waste Management) to manage waste volumes generated from response activities.

5.4.1 Response Need Based on Predicted Consequence Parameters

Table 5-6: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m^3 oil recovered (multiplier)	Oiled wildlife response – approx. $1m^3$ of oily liquid waste generated for each wildlife unit cleaned

5.4.2 Environmental Performance Based on Need

Table 5-7: 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 5.7)**
12	Waste Management	12.1	Contract with waste management services for transport, removal, treatment and disposal of waste.	1, 3A, 3B, 3C, 4
		12.2	Access to at least 50 m^3 of solid and liquid waste storage available within 1 week upon activation of 3rd party contract.	
		12.3	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		12.4	Teams will segregate liquid and solid wastes at the earliest opportunity.	
		12.5	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		12.6	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
		12.7	Waste management to be conducted in accordance with Australian laws and regulations.	1, 3A, 3B, 3C, 4
		12.8	Waste management services available and employed during response.	
13	Management of environmental impact of the response risks	13.1	All oiled wildlife response sites zoned and marked before operations commence to prevent secondary contamination and minimise the mixing of clean and oiled waste.	

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management from oiled wildlife response.

It indicates that the waste management capability has the following expected performance:

- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures.
- The waste management requirements of all credible spill scenarios are well within Woodside's and its service providers existing capacity.
- No further control measures that may result in an increased environmental benefit that involve moderate to significant cost and/or dedication of resources have been adopted as the requirements of this technique does not justify the excessive costs of identified alternate, improved or additional controls.

5.5 Scientific monitoring

A scientific monitoring program (SMP) would be activated following a Level 2 or 3 unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. This would consider receptors at risk (ecological and socio-economic) for the entire predicted Environment that Maybe Affected (EMBA) and in particular, any identified Pre-emptive Baseline Areas (PBAs) for the credible spill scenario(s) or other identified unplanned hydrocarbon releases associated with the activity (refer to **Table 2-1** Activity credible spill scenarios).

The outputs of the stochastic hydrocarbon spill modelling were used to assess the environmental risk of the hydrocarbon affected area as delineated by the ecological impact EMBA and social-cultural EMBA based on exceedance of environmental and social-cultural hydrocarbon threshold concentrations (refer to **Table 2-2**, Section **2.3.1.1** and see Section 4 and 6 of the EP for further information on applicable thresholds and the EMBAs). The Petroleum Activities Program vessel collision marine diesel spill (CS-01) has been modelled and considered to determine the WCCS for the SMP planning purposes and is the basis of the SMP approach presented in this section.

It should be noted that the resulting SMP receptor locations may differ from the Response Protection Areas (RPAs) presented and as discussed in **Section 3** of this document due to the applicability of different hydrocarbon threshold levels. The SMP would be informed by the data collected via the operational monitoring program (OMP) studies, however, it differs from the OMP in being a long-term program independent of, and not directing, the operational oil spill response or monitoring of impacts from response activities (refer to **Section 5.1** Monitor and Evaluate) for the operational monitoring overview.

Key objectives of the Woodside oil spill scientific monitoring program are:

- Assess the extent, severity and persistence of the environmental impacts from the spill event.
- Monitor subsequent recovery of impacted key species, habitats and ecosystems.

The SMP comprises ten targeted environmental monitoring programs to assess the condition of a range of physical-chemical (water and sediment) and biological (species and habitats) receptors including Environment Protection and Biodiversity Conservation Act (EPBC Act 1999) listed species, environmental values associated with protected areas and socio-economic values, such as fisheries. The ten SMPs are as follows:

- SM01 – Assessment of the presence, quantity and character of hydrocarbons in marine waters (linked to OM01 to OM03)
- SM02 – Assessment of the presence, quantity and character of hydrocarbons in marine sediments (linked to OM01 and OM05)
- SM03– Assessment of impacts and recovery of subtidal and intertidal benthos
- SM04 – Assessment of impacts and recovery of mangroves/saltmarsh habitat
- SM05 – Assessment of impacts and recovery of seabird and shorebird populations
- SM06 – Assessment of impacts and recovery of nesting marine turtle populations
- SM07 – Assessment of impacts to pinniped colonies including haul-out site populations
- SM08 – Desktop assessment of impacts to other non-avian marine megafauna
- SM09 – Assessment of impacts and recovery of marine fish (linked to SM03)
- SM10 – Assessment of physiological impacts to important fish and shellfish species (fish health and seafood quality/safety) and recovery.

These SMPs have been designed to cover all key tropical and temperate habitats and species within Australian waters and broader, if required. A planning area for scientific monitoring is also identified to acknowledge potential hydrocarbon contact below the environmental threshold concentrations and beyond the EMBA. This planning area has been set with reference to the entrained low exposure value of 10 ppb detailed in NOPSEMA Bulletin #1 Oil Spill Modelling (2019), as shown in **Figure 5-1**. 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 over an annual period for the WCCS (CS-01) and therefore represents the largest spatial boundaries of all 100 CS-01 hydrocarbon release combinations, and not the spatial extent of a single CS-01 spill.

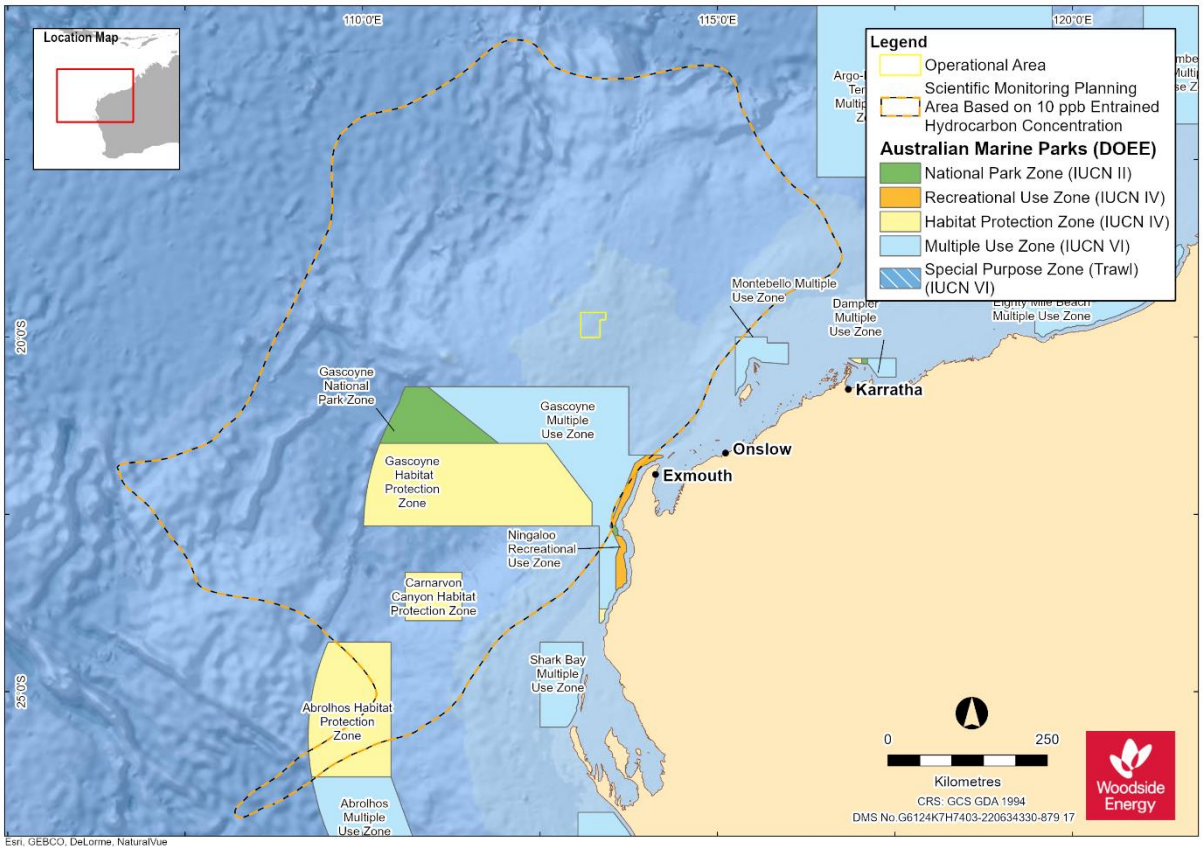

Figure 5-1: The planning area for scientific monitoring based on the area potentially contacted by the low (below ecological impact) entrained hydrocarbon threshold of 10 ppb in the event of the credible spill scenario (CS-01).

NOTE: Figure 5-1 represents the overall combined extent of the oil spill model outputs based on a total of 100 replicate simulations over an annual period for CS-01 and therefore represents the largest spatial boundaries of 100 CS-01 oil spill combinations, and not the spatial extent of a single CS-01 spill [6].

[6] Modelling for an instantaneous surface release of 2000 m^3 MDO was available at the same field location. It was originally undertaken in 2019 and reprocessed in 2021 using NOPSEMA's contemporary modelling thresholds. The largest tank of the vessel proposed for the activity is circa 1000 m^3, 50% smaller than the modelled MDO volume (2000 m^3). Given that spill parameters and geographic location fall within the envelope of the existing MDO modelling, it is an appropriate surrogate and therefore additional modelling was not required.

5.5.1 Scientific Monitoring Deployment Considerations

Scientific Monitoring Deployment Considerations	
Existing baseline studies for sensitive receptor locations predicted to be affected by a spill	Pre-emptive Baseline Areas (PBAs) of the following two categories: • PBAs within the predicted < 10-day hydrocarbon contact time prediction: The approach is to conduct a desktop review of available and appropriate baseline data for key receptors for locations (if any) that are potentially impacted within ten days of a spill and look to conduct baseline data collection to address data gaps and demonstrate spill response preparedness. Planning for baseline data acquisition is typically commenced pre-PAP and execution of studies undertaken with consideration of weather, receptor type, seasonality and temporal assessment requirements. • PBAs >10 days' time to predicted hydrocarbon contact in the event of an unplanned hydrocarbon release. SMP activation (as per the WA-61-L and WA-62-L Subsea Infrastructure Installation First Strike Plan) directs the SMP team to follow the steps outlined in the SMP Operational Plan. The steps include: checking the availability and type of existing baseline data, with particular reference to any PBAs identified as >10 days to hydrocarbon contact. Such information is used to identify response phase PBAs and plan for the activation of SMPs for pre-emptive (i.e. pre-hydrocarbon contact) baseline assessment.
Pre-emptive Baseline in the event of a spill	Activation of SMPs in order to collect baseline data at sensitive receptor locations with predicted hydrocarbon contact time > 10 days (refer to Section 5.5.2) and the process (as documented in ANNEX C: Oil Spill Scientific monitoring Program).
Survey platform suitability and availability	In the event of the SMP activation, suitable survey platforms are available and can support the range of equipment and data collection methodologies to be implemented in nearshore and offshore marine environments.
Trained personnel to implement SMPs suitable and available	Access to trained personnel and the sampling equipment contracted for scientific monitoring via a dedicated scientific monitoring program standby contract.
Met-ocean conditions	The following met-ocean conditions have been identified as the field operational limits for implementing SMPs: • waves < 1 m for nearshore systems • waves < 1.5 m for offshore systems • winds < 20 knots • daylight operations only. SMP implementation will be planned and managed according to HSE risk reviews and the met-ocean conditions on a day to day basis by SMP operations.

5.5.2 Response planning assumptions

Response Planning Assumptions	
Pre-emptive Baseline Areas (PBAs)	PBAs identified through the application of defined hydrocarbon impact thresholds during the Quantitative Spill Risk Assessment process and a consideration of the minimum time to contact at receptor locations fall into two categories: • PBAs for which baseline data exist or are planned for and data collection may commence pre-PAP (≤ 10 days minimum time to contact).

	• PBAs (> 10 days minimum time to contact) for which baseline data may be collected in the event of an unplanned hydrocarbon release. In the event of a spill, response phase PBAs are prioritised for SMP activities based on vulnerability (i.e. time to contact and environmental sensitivity) to potential impacts from hydrocarbon contact and as well as the identified need to acquire baseline data. Time to hydrocarbon contact of >10 days has been identified as a minimum timeframe within which it is feasible to plan and mobilise applicable SMPs and commence collection of baseline (pre-hydrocarbon contact) data, in the event of an unplanned hydrocarbon release from the WA-61-L and WA-62-L Subsea Infrastructure Installation operations. PBAs for the WA-61-L and WA-62-L Subsea Infrastructure Installation operations.are identified and listed in ANNEX D: Monitoring Program and Baseline Studies for the Petroleum Activities Program, Table D-1. The PBAs together with the situational awareness (from the operational monitoring) are the basis for the response phase SMP planning and implementation.
Pre-Spill	WA-61-L and WA-62-L Subsea Infrastructure Installation operations.: A review of existing baseline data for receptor locations (refer to Annex D) with potential to be contacted by entrained hydrocarbons at environmental thresholds within ≤10 days, relating to the credible hydrocarbon release for WA-61-L and WA-62-L Subsea Infrastructure Installation operations identified the following: • Gascoyne AMP • Carnarvon Canyon AMP *Note: Both are offshore deepwater marine parks and entrained hydrocarbons above the 100 ppb ecological threshold is predicted for the upper layers of the water column but there is no hydrocarbon contact with the seabed.*
In the Event of a Spill	Receptor locations with >10 days to hydrocarbon contact, as well as the wider area, will be investigated and identified by the SMP team (in the Environment Unit of the CIMT) as the spill event unfolds and as the situational awareness provided by the OMPs permits delineation of the spill affected area (for example, updates to the spill trajectory tracking). The full list is presented in Annex D, based on the PAP credible spill scenario (Table 2-1). To address the initial focus in a response phase SMP planning situation, receptor locations predicted to be contacted between >10 days have been identified as follows: • Abrolhos AMP (see note above for Gascoyne and Carnarvon Canyons AMPs, same applicable). In addition, the following AMPs are listed as a precaution as entrained hydrocarbons above 10 ppb are predicted to be present in the water column. • Ningaloo Coast AMP and World Heritage Area (including the Muiron Islands) • Montebello AMP The unfolding spill affected area predictions and confirmation of appropriate baseline data will determine the selection of receptor locations and SMPs to be activated in order to gather pre-emptive (pre-hydrocarbon contact) data. Refer to ANNEX C for further details on scientific monitoring plan implementation and delivery). The timing of SMP activation and mobilisation of the individual SMPs to undertake data collection will be decided and documented by the Woodside SMP team following the process outlined in the SMP Operational Plan. In the event key receptors within geographic locations that are potentially impacted after 10 days following a spill event or commencement of the spill and

	where adequate and appropriate baseline data are not available, there will be a response phase effort to collect baseline data for the following purposes: i. Priority will be given to the collection of baseline data for receptors predicted to be within the spill affected area prior to hydrocarbon contact. The process is initiated with the investigation of available baseline and time to hydrocarbon contact (>10 days which is sufficient time to mobilise SMP teams and acquire data before hydrocarbon contact). No receptor locations have been identified at this time for the WA-61-L and WA-62-L Subsea Infrastructure Installation operations. ii. Collect baseline data for receptors predicted to be outside the spill affected area so reference datasets for comparative analysis with impacted receptor types can be assessed post-spill.
Baseline Data	A summary of the spill affected area and receptor locations as defined by the EMBA for the PAP worst case credible spill, CS-01, are presented in the WA-61-L and WA-62-L Subsea Infrastructure Installation EP (Section 6). The key receptors at risk by location and corresponding SMPs based on the EMBA for the PAP are presented in ANNEX D: Monitoring Program and Baseline Studies for the Petroleum Activities Program, as per credible spill event scenario(s). This matrix maps the receptors at risk with their location and the applicable SMPs that may be triggered in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. Receptor locations and applicable SMPs are colour coded to highlight possible time to contact based on receptor types and locations. The status of baseline studies relevant to the PAP are tracked by Woodside through the maintenance of a Corporate Environment Environmental Baseline Database (managed by the Woodside Environmental Science team), as well as accessing external databases such as I-GEM (Industry-Government Environmental Metadata database) (refer to ANNEX C: Oil Spill Scientific monitoring Program).

5.5.3 Summary – scientific monitoring

The resulting scientific monitoring capability has been assessed against the PAP credible spill scenario. The range of techniques provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts. All known reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be moderate and the overall delivery effectiveness determined to be medium. The SMP's main objectives can be met, with no additional, alternative or improved control measures providing further benefit.

5.5.4 Response planning: need, capability and gap – scientific monitoring

The receptor locations identified in ANNEX D: Monitoring Program and Baseline Studies for the Petroleum Activities Program provide the basis of the SMPs likely to be selected and activated. Once the Woodside SMP Delivery team and the SMP standby contractor have been stood up and the exact nature and scale of the spill becomes known, the SMPs to be activated will be confirmed as per the process set out in the SMP Operational Plan.

Scope of SMP Operations in the event of a hydrocarbon spill:

Receptor locations of interest for the SMP during the response phase are:

- Gascoyne AMP
- Carnarvon Canyons AMP

- Ningaloo Coast WHA and AMP

Documented baseline studies are available for certain receptor locations including the Ningaloo Coast (ANNEX D: Monitoring Program and Baseline Studies for the Petroleum Activities Program, Table D-2). The SMP technique; however, would be to deploy SMP teams to maximise the opportunity to collect pre-emptive data such water quality in the upper water layers of the Gascoyne and Carnarvon Canyons AMPs as well as along the Ningaloo Coast. SM01 would be mobilised as a priority to be able to detect hydrocarbons and track the leading edge of the spill to verify where hydrocarbon contact occurs which will assist with where SMP resources are a priority need to obtain pre-emptive baseline data.

The ALARP assessment for the SMP (Section 6.5) considers alternate, additional, and/or improved control measures on each selected response technique.

5.5.5 Environmental performance based on need

Table 5-8: Scientific monitoring

Environmental Performance Outcome		Woodside can demonstrate preparedness to stand up the SMP to quantitatively assess and report on the extent, severity, persistence and recovery of sensitive receptors impacted from the spill event		
Control measure		**Performance Standard**		**Measurement Criteria**
14	• Woodside has an established and dedicated SMP team comprising the Science & Biodiversity Team and additional Environment Advisers.	14.1	SMP team comprises a pool of competent Environment Advisers (stand up personnel) who receive training regarding the SMP, SMP activation and implementation of the SMP on an annual basis	• Training materials • Training attendance registers • Process that maps minimum qualification and experience with key SMP role competency and a tracker to manage availability of competent people for the SMP team including redundancy and rostering
15	• Woodside has contracted SMP service provider to provide scientific personnel to resource a base capability of one team per SMP (SM01-SM10, see ANNEX C Table C-2) as detailed in Woodside's SMP standby contractor Implementation Plan, to implement the oil spill scientific monitoring programs. The availability of relevant personnel is reported to Woodside on a monthly basis via a simple report on the base-loading availability of people for each of the SMPs comprising field work for data collection (SMP resourcing report register). • In the event of a spill and the SMP is activated, the base-loading availability of scientific personnel will be provided by SMP standby contractor for the individual SMPs and where gaps in resources are identified, SMP standby contractor/Woodside will seek additional personnel (if needed) from other sources including Woodside's Environmental Services Panel.	15.1	Woodside maintains the capability to mobilise personnel required to conduct scientific monitoring programs SM01 – SM10 (except desktop based SM08): • Personnel are sourced through the existing standby contract with SMP standby contractor. as detailed within the SMP Implementation Plan. • Scientific Monitoring Program Implementation Plan describes the process for standing up and implementing the scientific monitoring programs. • SMP team stand up personnel receive training regarding the stand up, activation and implementation of the SMP on an annual basis	• OSPU Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master. • SMP resource report of personnel availability provided by SMP contractor on monthly basis (SMP resourcing report register). • Training materials • Training attendance registers • Competency criteria for SMP roles • SMP annual arrangement testing and reporting
16	• Roles and responsibilities for SMP implementation are captured in Table C-1 (ANNEX C) and the SMP team (as per the organisational structure of the CIMT) is outlined in SMP Operational Plan. Woodside has a defined Crisis and Incident Management structure including Source Control, Operations, Planning and Logistics functions to manage a loss of well containment response. • SMP Team structure, interface with SMP standby contractor and linkage to the CIMT is presented in Figure C-1, ANNEX C. • Woodside has a defined Command, Control and Coordination structure for Incident and Emergency Management that is based on the AIIMS framework utilised in Australia. • Woodside utilises an online Incident Management System (IMS) to coordinate and track key incident management functions. This includes specialist modelling programs, geographic information systems (GIS), as well as communication flows within the Command, Control and Coordination structure. • SMP activated via the FSP. • Step by step process to activation of individual SMPs provided in the SMP Operational Plan. • All decisions made regarding SMP logged in the online IMS (SMP team members trained in using Woodside's online Incident Management System). • SMP component input to the CIMT IAP as per the identified CIMT timed sessions and the SMP IAP logged on the online IMS. • Woodside Science & Biodiversity Team provides awareness training on the activation and stand-up of the Scientific Monitoring Programme (SMP) for the Environment Advisers in Woodside who are listed on the SMP team on an annual basis. • Woodside Science & Biodiversity Team provides awareness training on the activation and stand-up of the Scientific Monitoring Program (SMP) for the SMP Standby provider. • Woodside Science & Biodiversity Team co-ordinates an annual SMP arrangement testing exercise performed by the SMP standby contractor. SMP standby contractor and the SMP arrangements (people and equipment availability) tested annually since 2016.	16.1	• Woodside have established an SMP organisational structure and processes to stand up and deliver the SMP.	• SMP Oil Spill Scientific Monitoring Operational Plan • SMP Implementation Plan • SMP annual arrangement testing and reporting

17	• Chartered and mutual aid vessels. • Suitable vessels would be secured from the Woodside support vessels, regional fleet of vessels operated by Woodside and other operators and the regional charter market. • Vessel suitability will be guided by the need to be equipped to operate grab samplers, drop camera systems and water sampling equipment (the individual vessel requirements are outlined in the relevant SMP methodologies (refer to Table C-2, ANNEX C). • Nearshore mainland waters could use the same approach as for open water. Smaller vessels may be used where available and appropriate. Suitable vehicles and machinery for onshore access to nearshore SMP locations would be provided by Woodside's transport services contract and sourced from the wider market. • Dedicated survey equipment requirements for scientific monitoring range from remote towed video and drop camera systems to capture seabed images of benthic communities to intertidal/onshore surveying tools such as quadrats, theodolites and spades/trowels, cameras and binoculars (specific survey equipment requirements are outlined in the relevant SMP methodologies (refer to Table C-2, ANNEX C)). Equipment would be sourced through the existing SMP standby contract with Standby SMP contractor for SMP resources and if additional surge capacity is required this would be available through the other Woodside Environmental Services Panel Contractors and specialist contractors. Standby SMP contractor can also address equipment redundancy through either individual or multiple suppliers. MoUs are in place with marine sampling equipment suppliers and analytical laboratories (SMP resourcing report register). • Availability of SMP equipment for offshore/onshore scientific monitoring team mobilisation is within one week to ten days of the commencement of a hydrocarbon release. This meets the SMP mobilisation lead time that will support meeting the response objective of 'acquire, where practicable, the environmental baseline data prior to hydrocarbon contact required to support the post-response SMP.	17.1	Woodside maintains standby SMP capability to mobilise equipment required to conduct scientific monitoring programs SM01 – SM10 (except desktop based SM08): • Equipment are sourced through the existing standby contract with SMP standby contractor as detailed within the SMP Implementation Plan.	• Hydrocarbon Spill Preparedness Team Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master. • SMP standby monthly resource reports of equipment availability provided by SMP contractor (SMP resourcing report register). • SMP annual arrangement testing and reporting.
18	Woodside's SMP approach addresses the pre-PAP acquisition of baseline data for Pre-emptive Baseline Areas (PBAs) with ≤10 days if required following a baseline gap analysis process. Woodside maintains knowledge of Environmental Baseline data through: • Documentation annual reviews of the Woodside Baseline Environmental Studies Database, and specific activity baseline gap analyses. • Accessing external databases such as the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA) (refer to ANNEX C: Oil Spill Scientific Monitoring Program).	18.1	• Annual reviews of environmental baseline data • PAP specific Pre-emptive Baseline Area baseline gap analysis	• Annual review/update of Woodside Baseline Environmental Studies Database. • Desktop review to assess the environmental baseline study gaps completed prior to EP submission. • Accessing baseline knowledge via the SMP annual arrangement testing.

Environmental Performance Outcome		SMP plan to acquire response phase monitoring targeting pre-emptive baseline data achieved	
Control measure		**Performance Standard**	**Measurement Criteria**
19	Woodside's SMP approach addresses: • Scientific data acquisition for PBAs >10 days to hydrocarbon contact and activated in the response phase and • Transition into post-response SMP monitoring.	19.1	**Pre-emptive Baseline Area (PBA) baseline data acquisition in the response phase** If baseline data gaps are identified for PBAs predicted to have hydrocarbon contact in >10 days, there will be a response phase effort to collect baseline data. Priority in implementing SMPs will be given to receptors where pre-emptive baseline data can be acquired or improved. SMP team (within the Environment Unit of the CIMT) contribute SMP component of the CIMT Planning Function in development of the IAP.	• Response SMP plan • Woodside's online Incident Management System Records • SMP component of the Incident Action Plan (IAPs).
		19.2	**Post Spill contact** For the receptors contacted by the spill in where baseline data are available, SMPs programs to assess and monitor receptor condition will be implemented post spill (i.e. after the response phase).	• SMP planning document • SMP Decision Log • Incident Action Plans (IAPs)

Environmental Performance Outcome	Implementation of the SMP (response and post-response phases)	
Control measure	**Performance Standard**	**Measurement Criteria**

20	• Scientific monitoring will address quantitative assessment of environmental impacts of a level two or three spill or any release event with the potential to contact sensitive environmental receptors. The SMP comprises ten targeted environmental monitoring programs. • SMP supporting documentation: (1) Oil Spill Scientific Monitoring Operational Plan; (2) SMP Implementation Plan and (3) SMP Process and Methodologies Guideline. • The Oil Spill Scientific Monitoring Operational Plan details the process of SMP selection, input to the Incident Action Plan (IAP) to trigger operational logistic support services. Methodology documents for each of the ten SMPs are accessible detailing equipment, data collection techniques and the specifications required for the survey platform support. • The SMP standby contractor holds a Woodside SMP implementation plan detailing activation processes, linkage with the Woodside SMP team and the general principles for the planning and mobilisation of SMPs to deliver the individual SMPs activated. Monthly resourcing report are issued by the SMP standby contractor (SMP resourcing report register). All SMP documents and their status are tracked via SMP document register.	20.1	**Implementation of SM01** SM01 will be implemented to assess the presence, quantity and character of hydrocarbons in marine waters during the spill event in nearshore areas	Evidence SM01 has been triggered: • Documentation as per requirements of the SMP Operational Plan • Woodside's online Incident Management System Records. • SMP component of the IAP • SMP data records from field
		20.2	**Implementation of SM02-SM10** SM02-SM10 will be implemented in accordance with the objectives and activation triggers as per Table C-2 of Annex C.	Evidence SMPs have been triggered: • Documentation as per requirements of the SMP Operational Plan • Woodside's online Incident Management System Records. • SMP component of the IAP • SMP Data records from field
		20.3	**Termination of SMP plans** The Scientific Monitoring Program will be terminated in accordance with termination triggers for the SMP's detailed in Table C-2 of Annex C, and the Termination Criteria Decision-tree for Oil Spill Environmental Monitoring (Figure C-3 of Annex C):	Evidence of Termination Criteria triggered: • Documentation and approval by relevant persons/ organisations to end SMPs for specific receptor types.

5.6 Incident Management System

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.

5.6.1 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 incident action plan (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 persons/ organisations and government agencies as required. Depending on the type and scale of the incident either the CIMT DM or IC will be responsible for ensuring the development of the IAP. Incident Action Planning is an ongoing process that involves continual review to ensure techniques to control the incident are appropriate to the situation at the time.

5.6.2 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.

5.6.3 Consultation engagement process

Woodside will ensure persons/ organisations are engaged during the spill response in accordance with internal standards as outlined in **Table 5-9**. This process requires that Woodside will:

- Undertake all required notifications (including government notifications) for persons/ organisations in the region (identified in the First-Strike Response 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.

5.6.4 Environmental performance based on need

Table 5-9: 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 5.7)**
21	Operational NEBA	21.1	Confirm that the response techniques adopted at the time of acceptance remain appropriate to reduce the consequences of the spill within 24 hours.	1, 3A
		21.2	Record the evidence and justification for any deviation from the planned response activities.	
		21.3	Record the information and data from operational and scientific monitoring activities used to inform the NEBA.	
22	Stakeholder engagement	22.1	Prompt and record all notifications (including government notifications) for persons/ organisations in the region are made	
		22.2	In the event of a response, identification of relevant persons/ organisations will be re-assessed throughout the response period.	
		22.3	Undertake communications in accordance with: • Woodside Crisis Management Functional Support Team Guideline – Reputation • External Communication and Continuous Disclosure Procedure • External Stakeholder Engagement Procedure	
23	Personnel required to support any response	23.1	Action planning is an ongoing process that involves continual review to ensure techniques to control the incident are appropriate to the situation at the time.	1, 3B
		23.2	A duty roster of trained and competent people will be maintained to ensure that minimum manning requirements are met all year round.	3C
		23.3	Immediately activate the IMT with personnel filling one or more of the following roles: • Operations Duty Manager • Operations Coordinator • Deputy Operations Coordinator • Planning Coordinator • Logistics (materials, aviation, marine and support positions) • Management Support • Health and Safety Advisor • Environment duty Manager • People Coordinator • Public Information Coordinator • Intelligence Coordinator • Finance Coordinator.	1, 2, 3B, 3C, 4
		23.4	Collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an Incident Action Plan (IAP) and assist with the execution of that plan.	

Environmental Performance Outcome		To support the effectiveness of all other control measures and monitor/record the performance levels achieved.		
Control measure		**Performance Standard**		**Measurement Criteria (Section 5.7)**
		23.5	S&EM advisors will be integrated into CIMT to monitor performance of all functional roles.	
		23.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.	
		23.7	Follow the OPEA, Operational Plans, FSPs, support plans and the IAPs developed.	1, 2, 3A, 4
		23.8	Contribute to Woodside's response in accordance with the aims and objectives set by the Duty Manager.	1, 2, 3B, 3C, 4

5.7 Measurement criteria for all response techniques

Woodside ensures compliance with environmental performance outcomes and standards through four primary mechanisms. The aforementioned performance tables identify which of these four mechanisms monitors the readiness and records the effectiveness and performance of the control measures adopted.

1. The Incident Management System

The Incident Management System (IMS) supports the implementation of the Emergency and Crisis Management Procedure. The IMS provides a near real-time, single source of information for monitoring and recording an incident and measuring the performance of those control measures.

The Emergency and Crisis Management Procedure defines the management framework, including roles and responsibilities, to be applied to any size incident (including hydrocarbon spills). The organisational structure required to manage an incident is developed in a modular fashion and is based on the specific requirements of each incident. The structure can be scaled up or down.

The Incident Action Plan (IAP) process formally documents and communicated the:

- Incident objectives
- Status of assets
- Operational period objectives
- Response techniques (defined during response planning)
- The effectiveness of response techniques.

The information captured in the IMS (including information from personal logs and assigned tasks/close outs) confirms the response techniques implemented remain appropriate to reduce the consequences of the spill. The system also records all information and data that can be used to support the site-based IMT, development and the execution of the IAP.

2. The S&EM Competency Dashboard

The S&EM competency dashboard records the number of trained and competent responders that are available across Woodside, and some external providers, to participate in a response.

This number varies dependent on expiry of competency certificates, staff attrition, internal rotations, leave and other absences. As such the Dashboard is designed to identify the minimum manning requirements and to identify sufficient redundancy to cater for the variances listed above.

Figure 5-2 shows the minimum manning numbers for the different hydrocarbon spill response roles and the number of qualified persons against those roles.

Woodside's pool of trained responders is composed of but not limited to personnel from the following organisations:

- Woodside internal
- Australian Marine Oil Spill Centre (AMOSC) core group
- AMOSC
- Oil Spill Response Limited (OSRL)
- Marine Spill Response Corporation (MSRC)
- AMSA
- Woodside contracted workforce

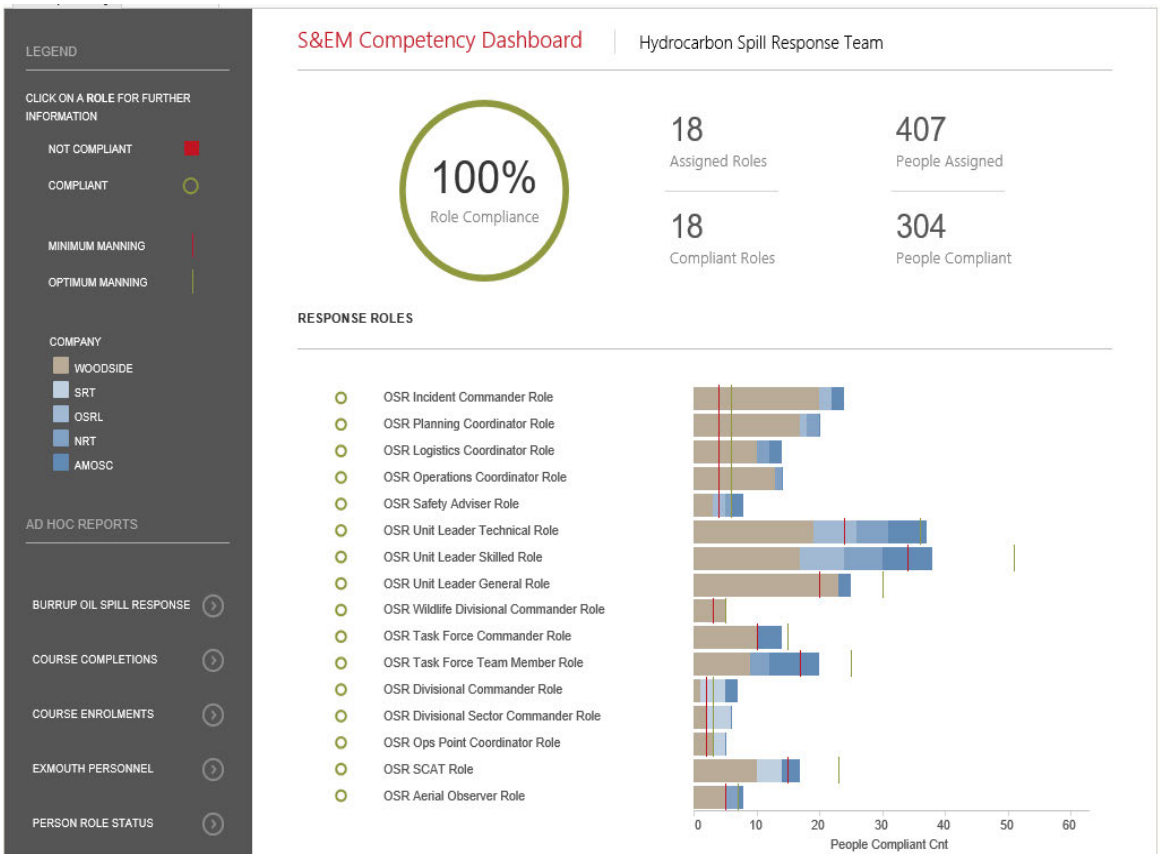

Figure 5-2: Example screen shot of the HSP competency dashboard

The Dashboard is one of Woodside's key means of monitoring its readiness to respond. It also shows that Woodside can meet the requirements of the environmental performance standard that relate to filling certain response roles.

Figure 5-3 shows deeper dive into the Ops Point Coordinator role and the training modules required to show competence.

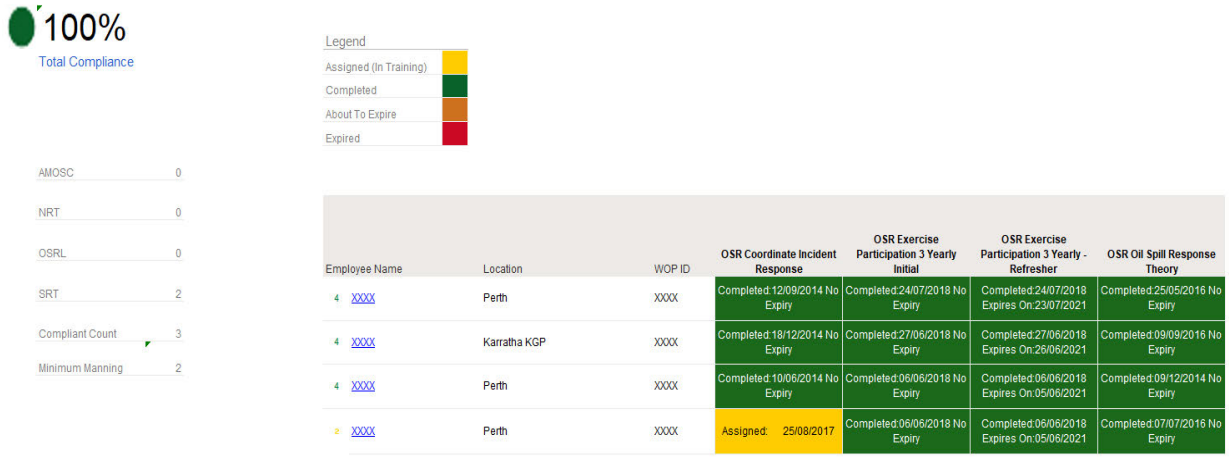

Figure 5-3: Example screen shot for the Ops Point Coordinator role

3. The Hydrocarbon Spill Preparedness ICE Assurance Process

The Hydrocarbon Spill Response Team has developed a Hydrocarbon Spill Preparedness and Response Internal Control Environment (ICE) process to align and feed into the Woodside Management System Assurance process for hydrocarbon spill. The process tracks compliance over four key control areas:

a) **Plans** – Ensures all plans (including: Oil Pollution Emergency Arrangements, first strike plans, operational plans, support plans and tactical response plans) are current and in line with regulatory and internal requirements.

b) **Competency** – Ensures the competency dashboard is up to date and there are the minimum competency numbers across CIMT, CMT and hydrocarbon spill response roles. The hydrocarbon spill training plan and exercise schedule, including testing of arrangements is also tracked. The Testing of Arrangements (TOA) register tracks the testing of all hydrocarbon spill response arrangements, key contracts and agreements in place with internal and external parties to ensure compliance.

c) **Capability** – Tracks and monitors capability that could be required in a hydrocarbon incident, including but not limited to: integrated fleet[7] vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.

d) **Compliance and Assurance** – Ensures all regulator inspection outcomes are actioned and closed out, the global legislation register is up to date and that the key assurance components are tracked and managed. Assurance activities (including Audits) conducted on memberships with key Oil Spill Response Organisations (OSROs) including AMOSC and OSRL are also tracked and recorded in the ICE.

The ICE assurance process records how each commitment listed in the performance tables above is managed to ensure ongoing compliance monitoring. The level of compliance can be reviewed in real time and is reported on a monthly basis through the S&EM Function.

The completion of the assurance checks (over and above the ICE process) is also applied via the Woodside Integrated Risk and Compliance System (WiRCs) and subject to the requirements of Woodside's Provide Assurance Procedure.

4. The Hydrocarbon Spill Preparedness and Response Procedure

This procedure sets out how to plan and prepare for a liquid hydrocarbon spill to the marine environment. (Note, this procedure does not apply to scenarios relating to gas releases in the marine environment).

This procedure details the:

- Requirement for an Oil Pollution Emergency Plan (OPEP) to be developed, maintained, reviewed, and approved by appropriate regulators (where applicable) including:
  - Defining how spill scenarios are developed on an activity specific basis
  - Developing and maintaining all hydrocarbon spill related plans
  - Ensuring the ongoing maintenance of training and competency for personnel
  - Developing the testing of spill response arrangements
  - Maintaining access to identified equipment and personnel.
- Planning for hydrocarbon spill response preparedness
- Accountabilities for hydrocarbon spill response preparedness
- Spill training requirements
- Requirements for spill exercising / testing of spill response arrangements
- Spill equipment and services requirements.

[7] The Integrated fleet consists of vessels from multiple operators that have been contracted to Woodside to undertake a number of duties including hydrocarbon spill response.

The procedure also details the roles and responsibilities of the dedicated Woodside Hydrocarbon Spill Preparedness team. This team is responsible for:

- Assuring that Woodside hydrocarbon spill responders meet competency requirements.
- Establishing the competency requirements, annual training schedule and a training register of trained personnel.
- Establishing and maintaining the total numbers of trained personnel required to provide an effective response to any hydrocarbon spill incident.
- Ensuring equipment and services contracts are maintained
- Establishing OPEPs
- Establishing OPEAs
- Priority response receptor determination
- ALARP determination
- Ensuring compliance and assurance is undertaken in accordance with external and internal requirements.

6 ALARP EVALUATION

This section should be read in conjunction with **Section 5** which is the capability planned for this activity.

6.1 Monitor and evaluate – 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 Monitor and evaluate – control measure options analysis

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, re-fuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.1.1.1 Alternative control measures

Alternative Control Measures considered
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approx. 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.	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
Alternate analysis technologies and methods such as gravimetric, colorimetric, infra-red and UV absorption for OM03.	Due to time, limitations on sampling, equipment, methodology and analysis, the technique does not provide an environmental benefit compared to alternative available technologies.	• Gravimetric (Involves lab analysis so cannot be done on location, maybe completed with field samples in laboratory), • Colorimetric (requires chemical addition and catalysts no standard method, needs specialist training), • Infra-red (droplet size too small for infra-red analysis). • Hydrocarbons need to be extracted from water for test, therefore requires a laboratory test), and • UV absorption (Similar technology to fluorometers which are more widely available in Australia) were evaluated but all have limitations that do not improve the environmental benefit.	NA	This strategy is not considered feasible, therefore no further ALARP assessment is conducted.	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	Approx. Cost	Assessment Conclusions	Implemented
Additional personnel trained to use systems for OM01.	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 will be on vessel, additional needs are met from Woodside owned stocks in King Bay Supply Facility (KBSF) and Exmouth or can be provided by service provider in a timely manner.	Cost for an additional satellite tracking buoy would be A$200 per day or A$6,000 to purchase.	This option is not adopted as the current capability meets the need, but additional units are available if required.	No

Additional trained aerial observers.	Current capability meets need. Woodside has access to a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL.	Current capability meets need. Woodside has a pool of trained, competent observers at strategic locations to ensure timely and sustainable response. Additional observers are available through current contracts with AMOSC and OSRL Aviation standards and guidelines 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$2,000 per person per day.	This option is not adopted as the current capability meets the need, but additional observers are available via response contractors if required.	No

6.1.1.3 Improved control measures

Improved Control Measures considered

Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approx. 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 24-hour access plus an initial A$5,000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	No
Night-time aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The images would be of low quality and no visual cross reference verification is possible and as such the variable is not adopted.	Flights will only occur when deemed safe by the pilot. The risk of night operations is disproportionate to the benefit gained, as images from sensors (IR, UV, etc.). will be low quality. Flight time limitations will be adhered to.	No improvement can be made without risk to personnel health and safety and breaching Woodside's golden rules.	This option is not adopted as the safety considerations outweigh any environmental benefit gained.	No
Faster mobilisation time (for water quality monitoring).	Due to the restriction on accessing the spill location on day 1 there is no environmental benefit in having vessels available from day 1. The cost of having dedicated equipment and personnel is disproportionate to the environmental benefit. The availability of vessels and personnel meets the response need.	Operations are not feasible on day 1 as volatility has potential to cause health and safety concerns within the first 24 hours of the response. Current Woodside arrangements allow for water quality monitoring to commence by day 3. Shortening the timeframes for vessel availability would require dedicated response vessels on standby in Darwin and would accelerate the initiation of monitoring by 1 day.	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$1 million 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

6.1.2 Selected control measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the activity.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.2 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.

6.2.1 Source Control via Vessel SOPEP – Control Measure Options Analysis

6.2.1.1 Alternative control measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*				
Option considered	**Environmental consideration**	**Feasibility**	**Approx. Cost**	**Implemented**
No reasonably practical alternative control measures identified.				N/A

6.2.1.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*				
Option considered	**Environmental consideration**	**Feasibility**	**Approx. Cost**	**Implemented**
No reasonably practical alternative control measures identified.				N/A

6.2.1.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*				
Option considered	**Environmental consideration**	**Feasibility**	**Approx. Cost**	**Implemented**
No reasonably practical alternative control measures identified.				N/A

6.2.1.4 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the activity.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.3 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 highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.3.1 Existing capability – 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, re-fuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.3.2 Wildlife response – control measure options analysis

6.3.2.1 Alternative control measures

Alternative Control Measures considered
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Direct contracts with service providers	This option duplicates the capability accessed through AMOSC and OSRL and would compete for the same resources. Does not provide a significant increase in environmental benefit.	These delivery options provide increased effectiveness through more direct communication and control of specialists. However, no significant net benefit is anticipated.	Duplication of capability - already subscribed to through contracts with AMOSC and OSRL	This option is not adopted as the existing capability meets the need.	No

6.3.2.2 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 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 threshold concentrations with offshore waters is expected from day one, given the low likelihood of such an event occurring and the low environmental benefit of an offshore response, the cost of implementing measures to reduce the mobilisation time is considered disproportionate to the benefit. Additionally, the remote offshore location of the release site with no predicted contact of shoreline receptors provides sufficient opportunity for the ongoing monitoring and surveillance operations to inform the scale of the response. Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. Oiled wildlife response capacity would be addressed for open Commonwealth waters through the AMOSC arrangements, as informed by operational monitoring. The cost and organisational complexity of this approach is moderate, and the overall delivery effectiveness is high.	Additional wildlife response resources could total A$1,700 per operational site per day.	This option is not adopted as the existing capability meets the need.	No
Additional trained wildlife responders	Numbers of oiled wildlife are expected to be low in the remote offshore setting of the oiled wildlife response, given the distance from known aggregation areas. The potential environmental benefit of training additional personnel is expected to be low.	Current numbers meet the needs required and additional personnel are available through existing contracts with oil spill response organisations and environmental panel contractors. Additional equipment and facilities would be required to support ongoing response, depending 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$2,000 per person per day.	This option is not adopted as the existing capability meets the need.	No

6.3.2.3 Improved control measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate Cost**	**Assessment conclusions**	**Implemented**
Faster mobilisation time for wildlife response.	Response time is limited by specialist personnel mobilisation time. Current timing is sufficient for expected first shoreline contact. This control measure provides increased effectiveness through faster mobilisation of specialists. However, no significant net environmental benefit is expected due to shoreline stranding times.	Pre-positioning vessels or equipment would reduce mobilisation time for oiled wildlife response activities. However, given the effectiveness of an oiled wildlife response is expected to be low, an earlier response would provide a marginal increase in environmental benefit.	Wildlife response packages to preposition at vulnerable sites identified through the deterministic modelling cost A$700 per package per day. The cost of having dedicated equipment and personnel available to respond faster is considered disproportionate to the environmental benefit.	This option is not adopted as the existing capability meets the need.	No

6.3.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the activity.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.4 Waste management – ALARP assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.4.1 Existing capability – waste management

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, re-fuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.4.2 Waste management – control measure options analysis

6.4.2.1 Alternative control measures

Alternative Control Measures considered
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
No reasonably practical alternative control measures identified.					

6.4.2.2 Additional control measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Increased waste storage capability	The procurement of waste storage equipment options on the day of the event will allow immediate response and storage of collected waste. The environmental benefit of immediate waste storage is to reduce ecological consequence by safely securing waste, allowing continuous response operations to occur.	Access to Veolia's storage options provides the resources required to store and transport sufficient waste to meet the need. Access to waste contractors existing facilities enables waste to be stockpiled and gradually processed within the regional waste handling facilities. Additional temporary storage equipment is available through existing third-party contracts and arrangements with OSRL. Existing arrangements meet identified need for the activity.	Cost for increased waste disposal capability would be approximately A$1,300 per m^3. Cost for increased onshore temporary waste storage capability would be approximately A$40 per unit per day.	This option is not adopted as the existing capability meets the need.	No

6.4.2.3 Improved control measures

Improved Control Measures considered
Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate Cost	Assessment conclusions	Implemented
Faster response	The environmental benefit from successful waste storage will reduce pressure on the treatment and disposal facilities reducing ecological consequences by safely securing waste. In addition, waste storage and transport will allow continuous response operations to occur. This delivery option would increase known available storage, eliminating the risk of additional resources not being available at the time of the event. However, the environmental benefit of Woodside procuring additional waste storage is considered minor as the risk of additional storage not being available at the time of the event is considered low and existing arrangements provide adequate storage to support the response.	The credible scenario for this activity does not predict any shoreline impact and at-sea response is not appropriate for a spill of Marine Diesel thus waste storage needs will be minimal. 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 there is no predicted shoreline impact.	This option is not adopted as the existing capability meets the need.	No

6.4.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the activity.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.5 Scientific Monitoring – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.5.1 Existing Capability – Scientific Monitoring

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, re-fuelling/re-stocking provisions, and other similar logistic and operational limitations that are beyond Woodside's direct control.

6.5.2 Scientific Monitoring – Control Measure Options Analysis

Alternative Control Measures considered
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Ref	Control Measure Category	Option considered	Implemented	Environmental Consideration	Feasibility / Cost
SM01	System	Analytical laboratory facilities closer to the likely spill affected area	No	SM01 water quality monitoring requires water samples to be transported to National Association of Testing Authorities (NATA) rated laboratories in Perth or interstate. 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). The environmental consideration of having access to suitable laboratory facilities in Exmouth or 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).	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.
SM01	System	Dedicated contracted SMP vessel (exclusive to Woodside)	No	Would provide faster mobilisation time of scientific monitoring resources, environmental benefit associated with faster mobilisation time would be minor compared to selected options.	Chartering and equipping additional vessels on standby for scientific monitoring has been considered. The option is reasonably practicable but the sacrifice (charter costs and organisational complexity) is significant, particularly when compared with the anticipated availability of vessels and resources within in the required timeframes. The selected delivery provides capability to meet the scientific monitoring objectives, including collection of pre-emptive data where baseline knowledge gaps are identified for receptor locations where spill predictions of time to contact are >10 days. The effectiveness of this alternative control (weather dependency, availability and survivability) is rated as very low The cost and organisational complexity of employing a dedicated response vessel is considered disproportionate to the potential environmental benefit by adopting these delivery options.

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

Ref	Control Measure Category	Option considered	Implemented	Environmental Consideration	Feasibility / Cost
SM01	System	Determine baseline data needs and provide implementation plan in the event of an unplanned hydrocarbon release	Yes	Address resourcing needs to collect post spill (pre-contact) baseline data as spill expands in the event of a loss of well containment from the PAP activities.	Woodside relies on existing environmental baseline for receptors which have predicted hydrocarbon contact (above environment threshold) <10 days and acquiring pre-emptive data in the event of a loss of well containment from the PAP activities based on receptors predicted to have hydrocarbon contact >10 days. Ensure there is appropriate baseline for key receptors for all geographic locations that are potentially impacted <10 days of spill event, where practicable. Address resourcing needs to collect pre-emptive baseline as spill expands in the event of a loss of well containment from the activities.

6.5.3 Improved Control Measures

Improved Control Measures considered – No reasonably practicable improved Control Measures identified.

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
  - Determine baseline data needs and activate SMPs for any identified PBAs in the event of an unplanned hydrocarbon release
- Improved
  - None selected

6.5.5 Operational Plan

Key actions from the Scientific Monitoring Program Operational Plan for implementing the response are outlined in **Table 6-1**.

Table 6-1: Scientific monitoring program operational plan actions

Responsibility	Action
Activation	
CIMT Planning (CIMT Planning – Environment Unit)	Mobilise SMP Lead/Manager and SMP Coordinator to the CIMT Planning function.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	Constantly assess all outputs from OM01, OM02 and OM03 (**Section 5** and ANNEX B: Operational Monitoring Activation and Termination Criteria) to determine receptor locations and receptors at risk. Confirm sensitive receptors likely to be exposed to hydrocarbons, timeframes to specific receptor locations and which SMPs are triggered. Review baseline data for receptors at risk.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	SMP co-ordinator stands up the SMP contractor. Stands up subject matter experts, if required.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager SMP Coordinator, SMP standby contractor SMP manager)	Establish if, and where, pre-contact baseline data acquisition is required. Determine practicable baseline acquisition program based on predicted timescales to contact and anticipated SMP mobilisation times. Determine scope for preliminary post-contact surveys during the Response Phase. Determine which SMP activities are required at each location based on the identified receptor sensitivities.
CIMT Planning	If response phase data acquisition is required, stand up the contractor SMP teams for data acquisition and instruct them to standby awaiting further details for mobilisation from the CIMT.

Responsibility	Action
(CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP standby contractor SMP manager)	
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP standby contactor SMP manager)	SMP contractor, SMP standby contractor to prepare the Field Implementation Plan. Prepare and obtain sign-off of the Response Phase SMP work plan and Field Implementation Plan. Update the IAP.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator SMP standby contactor SMP manager)	Liaise with CIMT Logistics, and determine the status and availability of aircraft, vessels and road transportation available to transport survey personnel and equipment to point of departure. Engage with SMP standby contactor SMP Manager and CIMT Logistics to establish mobilisation plan, secure logistics resources and establish ongoing logistical support operations, including: • Vessels, vehicles and other logistics resources • Vessel fit-out specifications (as • Detailed in the Scientific Monitoring Program Operational Plan • Equipment storage and pick-up locations • Personnel pick-up/airport departure locations • Ports of departure • Land based operational centres and forward operations bases Accommodation and food requirements.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP standby contactor (SMP manager)	Confirm communications procedures between Woodside SMP team, SMP contractor SMP Duty Manager, SMP Team Leads and Operations Coordinator (CIMT).
Mobilisation	
CIMT Logistics	Engage vessels and vehicles and arrange fitting out as specified by the mobilisation Plan Confirm vessel departure windows and communicate with the SMP contractor SMP Duty Manager. Agree SMP mobilisation timeline and induction procedures with the Operations Coordinator (CIMT).
CIMT Logistics	Coordinate with SMP contactor SMP Duty Manager to mobilise teams and equipment according to the logistics plan and Sector induction procedures.

Responsibility	Action
SMP Survey Team Leads	SMP Survey Team Leader(s) coordinate on-ground/on-vessel mobilisations and support services with the Operations Coordinator (CIMT).

6.5.6 ALARP and Acceptability Summary

ALARP and Acceptability Summary		
Scientific Monitoring		
ALARP Summary	X	All known reasonably practicable control measures have been adopted
	X	Additional Measures: Determine baseline data needs and activate SMPs for any identified PBAs in the event of an unplanned hydrocarbon release
		No reasonably practical additional, alternative, and/or improved control measure exists
	The resulting scientific monitoring capability has been assessed against the worst-case credible spill scenarios. The range of strategies provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts. All known reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be Moderate and the overall delivery effectiveness considered Medium. The SMP's main objectives can be met, with the addition of one alternative control measures to provide further benefit.	
Acceptability Summary	• The control measures selected for implementation manage the potential impacts and risks to ALARP. • In the event of a hydrocarbon spill for the PAP, the control measures selected, meet or exceed the requirements of Woodside Management System and industry best-practice. • Throughout the PAP, relevant Australian standards and codes of practice will be followed to evaluate the impacts from an unplanned hydrocarbon release. • The level of impact and risk to the environment has been considered with regard to the principles of Environmentally Sustainable Development (ESD); and risks and impacts from a range of identified scenarios were assessed in detail. The control measures described consider the conservation of biological and ecological diversity, through both the selection of control measures and the management of their performance. The control measures have been developed to account for the worst-case credible case scenario, and uncertainty has not been used as a reason for postponing control measures.	
On the basis from the ALARP impact assessment above and in Section 6 of the EP Woodside considers the adopted controls discussed, manage the impacts and risks associated with implementing scientific monitoring activities to a level that is ALARP and acceptable.		

7 ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

The implementation of response techniques may modify the impacts and risks identified in the EP and response activities can introduce additional impacts and risks from response operations themselves. Therefore, it is necessary to complete an assessment to ensure these impacts and risks have been considered and specific measures are put in place to continually review and manage these further impacts and risks to ALARP and Acceptable levels. A simplified assessment process has been used to complete this task which covers the identification, analysis, evaluation and treatment of impacts and risks introduced by responding to the event.

7.1 Identification of impacts and risks from implementing response techniques

Each of the control measures can modify the impacts and risks identified in the EP. These impacts and risks have been previously assessed within the scope of the EP. Refer to the EP for details regarding how these risks are being managed. They are not discussed further in this document.

- Atmospheric emissions
- Routine and non-routine discharges
- Physical presence, proximity to other vessels (shipping and fisheries)
- Routine acoustic emissions vessels
- Lighting for night work/navigational safety
- Invasive marine species
- Collision with marine fauna
- Disturbance to Seabed

Additional impacts and risks associated with the control measures not included within the scope of the EP include:

- Vessel operations and anchoring
- Additional stress or injury caused to wildlife
- Waste generation

7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

Table 7-1: Analysis of risks and impacts

	Environmental Value						
	Soil and Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/ Habitat	Species	Socio-Economic
Monitor and evaluate		✓	✓		✓	✓	
Source control		✓	✓	✓	✓	✓	✓
Oiled Wildlife					✓	✓	
Scientific Monitoring		✓	✓		✓	✓	✓
Waste Management	✓			✓	✓	✓	✓

7.3 Evaluation of impacts and risks from implementing response techniques

7.3.1 Vessel operations

During the implementation of response techniques, where water depths allow, it is possible that response vessels will be required to anchor (e.g. during shoreline surveys). The use of vessel anchoring will be minimal and likely to occur when the impacted shoreline is inaccessible via road. Anchoring in the nearshore environment of sensitive receptor locations will have the potential to impact coral reef, seagrass beds and other benthic communities in these areas. Recovery of benthic communities from anchor damage depends on the size of anchor and frequency of anchoring. Impacts would be highly localised (restricted to the footprint of the vessel anchor and chain) and temporary, with full recovery expected.

7.3.2 Additional stress or injury caused to wildlife

Additional stress or injury to wildlife could be caused through the following phases of a response:

- Capturing wildlife
- Transporting wildlife
- Stabilisation of wildlife
- Cleaning and rinsing of oiled wildlife
- Rehabilitation (e.g. diet, cage size, housing density)
- Release of treated wildlife

Inefficient capture techniques have the potential to cause undue stress, exhaustion or injury to wildlife, additionally pre-emptive capture could cause undue stress and impacts to wildlife when there are uncertainties in the forecast trajectory of the spill. During the transportation and stabilisation phases there is the potential for additional thermoregulation stress on captured wildlife. Additionally, during the cleaning process, it is important personnel undertaking the tasks are familiar with the relevant techniques to ensure that further injury and the removal of water proofing feathers are managed and mitigated. Finally, during the release phase it's important that wildlife is not released back into a contaminated environment.

7.3.3 Waste generation

Implementing the selected response techniques will result in the generation of the following waste streams that will require management and disposal:

- Liquids (recovered oil/water mixture), recovered from oiled wildlife response operations
- Semi-solids/solids (oily solids), collected during oiled wildlife response operations
- Debris collected during oiled wildlife response.

If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination, impacts to wildlife through contact with or ingestion of waste materials and contamination risks if not disposed of correctly onshore.

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.

7.4.1 Vessel operations and access to the nearshore environment

- If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified (Performance Standard (PS) 7.1).

7.4.2 Additional stress or injury caused to wildlife

- Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA, and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan (PS 11.1).

7.4.3 Waste generation

- All oiled wildlife response sites zoned and marked before operations commence to prevent secondary contamination and minimise the mixing of clean and oiled waste (PS 13.1).

8 ALARP CONCLUSION

An analysis of alternative, additional and improved control measures has been undertaken to determine their reasonableness and practicability. The tables in **Section 6** document the considerations made in this evaluation. Where the costs of an alternative, additional, or improved control measure have been determined to be clearly disproportionate to the environmental benefit gained from its adoption it has been rejected. Where this is not considered to be the case the control measure has been adopted.

The risks from a hydrocarbon spill have been reduced to ALARP because:

- Woodside has a significant hydrocarbon spill response capability to respond to the WCCS through the control measures identified.
- New and modified impacts and risks associated with implementing response techniques have been considered and will not increase the risks associated with the activity.
- A consideration of alternative, additional, and improved control measures identified any other control measures that delivered proportionate environmental benefit compared to the cost of adoption for this activity ensuring that:
    - All known, reasonably practicable control measures have been adopted.
    - No additional, reasonably practicable alternative and/or improved control measures would provide further environmental benefit.
    - No reasonably practical additional, alternative, and/or improved control measure exists.
- A structured process for considering alternative, additional, and improved control measures was completed for each control measure.
- The evaluation was undertaken based on the outputs of the WCCS so that the capability in place is sufficient for all other scenario from this activity.
- The likelihood of the WCCS spill has been ignored in evaluating what was reasonably practicable.

9 ACCEPTABILITY CONCLUSION

Following the ALARP evaluation process, Woodside deems the hydrocarbon spill risks and impacts have been reduced to an acceptable level by meeting all of the following criteria:

- Techniques are consistent with Woodside's processes and relevant internal requirements including policies, culture, processes, standards, structures and systems.
- Levels of risk/ impact are deemed acceptable by relevant persons (external persons/ organisations) and are aligned with the uniqueness of, and/or the level of protection assigned to the environment, its sensitivity to pressures introduced by the activity, and the proximity of activities to sensitive receptors, and have been aligned with Part 3 of the EPBC Act.
- Selected control measures meet requirements of legislation and conventions to which Australia is a signatory (e.g. MARPOL, the World Heritage Convention, the Ramsar Convention, and the Biodiversity Convention etc.). In addition to these, other non-legislative requirements met include:
    - Australian IUCN reserve management principles for Commonwealth marine protected areas and bioregional marine plans.
    - National Water Quality Management Strategy and supporting guidelines for marine water quality).
    - Conditions of approval set under other legislation.
    - National and international requirements for managing pollution from ships.
    - National biosecurity requirements.
- Industry standards, best practices and widely adopted standards and other published materials have been used and referenced when defining acceptable levels. Where these are inconsistent with mandatory/ legislative regulations, explanation has been provided for the proposed deviation. Any deviation produces the same or a better level of environmental performance (or outcome).

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11 GLOSSARY AND ABBREVIATIONS

11.1 Glossary

Term	Description / Definition
ALARP	Demonstration through reasoned and supported arguments that there are no other practicable options that could reasonably be adopted to reduce risks further.
Availability	The availability of a control measure is the percentage of time that it is capable of performing its function (operating time plus standby time) divided by the total period (whether in service or not). In other words, it is the probability that the control has not failed or is undergoing a maintenance or repair function when it needs to be used.
Control	The means by which risk from events is eliminated or minimised.
Control effectiveness	A measure of how well the control measures perform their required function.
Control measure (risk control measure)	The features that eliminate, prevent, reduce or mitigate the risk to environment associated with PAP.
Credible spill scenario	A spill considered by Woodside as representative of maximum volume and characteristics of a spill that could occur as part of the PAP.
Dependency	The degree of reliance on other systems in order for the control measure to be able to perform its intended function.
Environment that may be affected	The summary of quantitative modelling where the marine environment could be exposed to hydrocarbons levels exceeding hydrocarbon threshold concentrations.
Incident	An event where a release of energy resulted in or had (with) the potential to cause injury, ill health, damage to the environment, damage to equipment or assets or company reputation.
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, e.g., Gascoyne AMP.

Term	Description / Definition
Receptor Sensitivities	This is a classification scheme to categorise receptor sensitivity to an oil spill. The Environmental Sensitivity Index (ESI) is a numerical classification of the relative sensitivity of a particular environment (particularly different shoreline types) to an oil spill. Refer to the Woodside Oil Pollution Emergency Arrangements (Australia) for more details.
Regulator	NOPSEMA are the Environment Regulator under the Environment Regulations.
Reliability	The probability that at any point in time a control measure will operate correctly for a further specified length of time.
Response technique	The key priorities and objectives to be achieved by the response plan. Measures taken in response to an event to reduce or prevent adverse consequences.
Survivability	Whether or not a control measure is able to survive a potentially damaging event is relevant for all control measures that are required to function after an incident has occurred.
Threshold	Hydrocarbon threshold concentrations applied to the risk assessment to evaluate hydrocarbon spills. These are defined as: surface hydrocarbon concentration – ≥10 g/m^2, dissolved – ≥50 ppb and entrained hydrocarbon concentrations – ≥100 ppb.

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
APASA	Asia Pacific ASA
BAOAC	Bonn Agreement Oil Appearance Code
CIMT	Corporate Incident Management Team
DM	Duty Manager
DoT	Western Australia Department of Transport
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions (former Western Australian Department of Parks and Wildlife)
EMBA	Environment that May Be Affected
EP	Environment Plan
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
ESI	Environmental Sensitivity Index
ESD	Ecologically Sustainable Development
ESP	Environmental Services Panel
FSP	First Strike Plan
GIS	Geographic Information System
GPS	Global Positioning System
HSP	Hydrocarbon Spill Preparedness
IAP	Incident Action Plan
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environment Conservation Association
ITOPF	International Tanker Owners Pollution Federation
IUCN	International Union for Conservation of Nature
KBSF	King Bay Supply Facility
KIMC	Karratha Incident Management Centre
KSAT	Kongsberg Satellite
ME	Monitor and Evaluate
MoU	Memorandum of Understanding
NEBA	Net Environmental Benefit Analysis
NOAA	National Oceanic and Atmospheric Administration

Abbreviation	Meaning
NRT	National Response Team
OILMAP	Oil Spill Model and Response System
OPEA	Oil Pollution Emergency Arrangements
OPEP	Oil Pollution Emergency Plan
OPGGSA	Offshore Petroleum and Greenhouse Gas Storage Act
OSMP	Operational and Scientific Monitoring Program
OSRL	Oil Spill Response Limited
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
OWRP	Oiled Wildlife Response Plan
OWROP	Regional Oiled Wildlife Response Operational Plan
PAP	Petroleum Activities Program
PBA	Pre-emptive Baseline Areas
PPA	Priority Protection Area
PPB	Parts per billion
PPM	Parts per million
PS	Performance standard
RPA	Response Protection Area
SIMAP	Integrated Oil Spill Impact Model System
SMP	Scientific monitoring program
SOP	Standard Operating Procedure
TRP	Tactical Response Plan
WHA	World Heritage Area
Woodside	Woodside Energy Limited
WCC	Woodside Communication Centre
WCCS	Worst Case Credible Scenario

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 marine diesel. The complete list of potential receptor locations within the EMBA for the PAP is included in Section 6 of the EP.

The NEBA was conducted for open Commonwealth waters and the Gascoyne AMP (identified as an RPA). The EMBA was not predicted by modelling to overlap any RPAs above the surface threshold of 50 g/m^2 or the shoreline accumulation threshold of 100 g/m^2. However, the Gascoyne AMP was predicted to be contacted by hydrocarbons above the entrained threshold of 100 ppb (prior to day 14).

The detailed NEBA assessment outcomes are shown below.

The full NEBA assessments are available here (Link).

Table A-1: NEBA assessment technique recommendations for a surface release due to a vessel tank rupture of marine diesel (Credible Scenario-01)

Receptor	Monitor and Evaluate	Containment and Recovery	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled Wildlife Response	In situ burning	Mechanical dispersion	Source Control
Open Commonwealth waters (Operational Area)	Yes	No	No	No	No	No	No	Yes	No	No	Yes
Gascoyne AMP	Yes	No	No	No	No	No	No	Yes	No	No	Yes

Overall assessment

Sensitive receptor (Sites identified in EP)	Monitor and Evaluate	Containment and Recovery	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled Wildlife Response	In situ burning	Mechanical dispersion	Source Control
Is this response Practicable?	Yes	No	No	No	No	No	No	Yes	No	No	Yes
NEBA identifies Response potentially of Net Environmental Benefit?	Yes	No	No	No	No	No	No	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[8]	Potential duration of impact	Equivalent Woodside Corporate Risk Matrix Consequence Level
Positive	3P	Major	Likely to prevent: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-today business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches) or regulatory designations.	Decrease in duration of impact by > 5 years	N/A
	2P	Moderate	Likely to prevent: • significant impact to a single phase of reproductive cycle of biological receptors • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors.	Decrease in duration of impact by 1–5 years	N/A

	1P	Minor	Likely to prevent impacts on:
			• significant proportion of population or breeding stages of biological receptors
			• socio-economic receptors such as:
			  ○ significant impact to the sensitivity of protective designation; or
			  ○ significant and long-term impact to business/industry.
				Decrease in duration of impact by several seasons (< 1 year)	N/A

	0	Non-mitigated spill impact	**No detectable difference to unmitigated spill scenario.**		
Negative	1N	Minor	Likely to result in: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-to-day business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches), or regulatory designations.	Increase in duration of impact by several seasons (< 1 year)	Increase in risk by one sub-category, without changing category (e.g. Minor (E) to Minor (D))
	2N	Moderate	Likely to result in: • significant impact to a single phase of reproductive cycle for biological receptors; or • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors. This level of negative impact is recoverable and unlikely to result in closure of business/industry in the region.	Increase in duration of impact by 1–5 years	Increase in risk by one category (e.g. Minor (D) to Moderate (C or B))

	3N	Major	Likely to result in impacts on:
			• significant proportion of population or breeding stages of biological receptors
			• socio-economic receptors resulting in either:
			  ○ significant impact to the sensitivity of protective designation; or
			  ○ significant and long-term impact to business/industry.
				Increase in duration of impact by > 5 years or unrecoverable	Increase in risk by two categories (e.g. Minor (E) to Major (A))

[8] 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 1 (OM01) Predictive Modelling of Hydrocarbons to Assess Resources at Risk	OM01 focuses on the conditions that have prevailed since a spill commenced, as well as those that are forecasted in the short term (1–3 days ahead) and longer term. OM01 utilises computer-based forecasting methods to predict hydrocarbon spill movement and guide the management and execution of spill response operations to maximise the protection of environmental resources at risk. The objectives of OM01 are to: • Provide forecasting of the movement and weathering of spilled hydrocarbons • Identify resources that are potentially at risk of contamination • Provide simulations showing the outcome of alternative response options (booming patterns etc.) to inform on-going Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP	OM01 will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of OM01 are: • The hydrocarbon discharge has ceased • Response activities have ceased • Hydrocarbon spill modelling (as verified by OM02 surveillance observations) predicts no additional natural resources will be impacted
Operational Monitoring Operational Plan 2 (OM02) Surveillance and reconnaissance to detect hydrocarbons and resources at risk	OM02 aims to provide regular, on-going hydrocarbon spill surveillance throughout a broad region, in the event of a spill. The objectives of OM02 are: • Verify spill modelling results and recalibrate spill trajectory models (OM01) • Understand the behaviour, weathering and fate of surface hydrocarbons • Identify environmental receptors and locations at risk or contaminated by hydrocarbons • Inform ongoing Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP • To aid in the subsequent assessment of the short- to long-term impacts and/or recovery of natural resources (assessed in SMPs) by ensuring that the visible cause and effect relationships between the hydrocarbon spill and its impacts to natural resources have been observed and recorded during the operational phase.	OM02 will be triggered immediately following a level 2/3 hydrocarbon spill.	The termination triggers for the OM02 are: • 72 hours has elapsed since the last confirmed observation of surface hydrocarbons • Latest hydrocarbon spill modelling results (OM01) do not predict surface exposures at visible levels

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan 3 (OM03) Monitoring of hydrocarbon presence, properties, behaviour and weathering in water	OM03 will measure surface, entrained and dissolved hydrocarbons in the water column to inform decision-making for spill response activities. The specific objectives of OM03 are as follows: • Detect and monitor for the presence, quantity, properties, behaviour and weathering of surface, entrained and dissolved hydrocarbons • Verify predictions made by OM01 and observations made by OM02 about the presence and extent of hydrocarbon contamination Data collected in OM03 will also be used for the purpose of longer-term water quality monitoring during SM01.	OM03 will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of OM03 are as follows: • The hydrocarbon release has ceased • Response activities have ceased • Concentrations of hydrocarbons in the water are below available ANZECC/ ARMCANZ (2000) trigger values for 99% species protection.
Operational Monitoring Operational Plan 4 (OM04) Pre-emptive assessment of sensitive receptors at risk	OM04 aims to undertake a rapid assessment of the presence, extent and current status of shoreline sensitive receptors prior to contact from the hydrocarbon spill, by providing categorical or semi-quantitative information on the characteristics of resources at risk. The primary objective of OM04 is to confirm understanding of the status and characteristics of environmental resources predicted by OM01 and OM02 to be at risk, to further assist in making decisions on the selection of appropriate response actions and prioritisation of resources. Indirectly, qualitative/semi-quantitative pre-contact information collected by OM04 on the status of environmental resources may also aid in the verification of environmental baseline data and provide context for the assessment of environmental impacts, as determined through subsequent SMPs.	Triggers for commencing OM04 include: • Contact of a sensitive habitat or shoreline is predicted by OM01, OM02 and/or OM03 • The pre-emptive assessment methods can be implemented before contact from hydrocarbons (once a receptor has been contacted by hydrocarbons it will be assessed under OM05)	The criteria for the termination of OM04 at any given location are: • Locations predicted to be contacted by hydrocarbons have been contacted • The location has not been contacted by hydrocarbons and is no longer predicted to be contacted by hydrocarbons (resources should be reallocated as appropriate)

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational monitoring operational plan 5 (OM05) Monitoring of contaminated resources	OM05 aims to implement surveys to assess the condition of fauna and habitats contacted by hydrocarbons at sensitive habitat and shoreline locations. The primary objectives of OM05 are: • Record evidence of oiled fauna (mortalities, sub-lethal impacts, number, extent, location) and habitats (mortalities, sub-lethal impacts, type, extent of cover, area, hydrocarbon character, thickness, mass and content) throughout the response and clean-up at locations contacted by hydrocarbons to inform and prioritise clean-up efforts and resources, while minimising the potential impacts of these activities. Indirectly, the information collected by OM05 may also support the assessment of environmental impacts, as determined through subsequent SMPs.	OM05 will be triggered when a sensitive habitat or shoreline is predicted to be contacted by hydrocarbons by OM01, OM02 and/or OM03.	The criteria for the termination of OM05 at any given location are: • No additional response or clean-up of fauna or habitats is predicted • Spill response and clean-up activities have ceased OM05 survey sites established at sensitive habitat and shoreline locations will continue to be monitored during SM02. The formal transition from OM05 to SM02 will begin on cessation of spill response and clean-up activities.

ANNEX C: OIL SPILL SCIENTIFIC MONITORING PROGRAM

Oil Spill Environmental Monitoring

The following provides some further detail on Woodside's oil spill scientific monitoring Program and includes the following:

- The organisation, roles and responsibilities of the Woodside oil spill scientific monitoring team and external resourcing.
- A summary table of the ten scientific monitoring programs as per the specific focus receptor, objectives, activation triggers and termination criteria.
- Details on the oil spill environmental monitoring activation and termination decision-making processes.
- Baseline knowledge and environmental studies knowledge access via geo-spatial metadata databases.
- An outline of the reporting requirements for oil spill scientific monitoring programs.

Oil Spill Scientific Monitoring – Delivery Team Roles and Responsibilities

Woodside Oil Spill Scientific Monitoring Delivery Team

The Woodside science team are responsible for the delivery of the oil spill scientific monitoring. The roles and responsibilities of the Woodside scientific monitoring delivery team are presented in Table C-1 and the organisational structure and Corporate Incident Management Team (CIMT) linkage provided in Figure C-1.

Woodside Oil Spill Scientific monitoring program - External Resourcing

In the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors, scientific monitoring personnel and scientific equipment to implement the appropriate SMPs will be provided by SMP Standby contractor who hold a standby contract for SMP via the Woodside Environmental Services Panel (ESP). In the event that additional resources are required other consultancy capacity within the Woodside ESP will be utilised (as needed and may extend to specialist contractors such as research agencies engaged in long-term marine monitoring programs). In consultation with the SMP Standby Contractor and/or specialist contractors, the selection, field sampling and approach of the SMPs will be determined by the nature and scale of the spill.

Table C-1: Woodside and Environmental Service Provider – Oil Spill Scientific Monitoring Program Delivery Team Key Roles and Responsibilities

Role	Location	Responsibility
Woodside Roles		
SMP Lead/ Manager	Onshore	• Approves activated the SMPs based on operational monitoring data provided by the Planning Function • Provides advice to the CIMT in relation to scientific monitoring • Provides technical advice regarding the implementation of scientific monitoring • Approves detailed sampling plans prepared for SMPs • Directs liaison between statutory authorities, advisors and government agencies in relation to SMPs.
SMP Co-Ordinator	Onshore	• Activates the SMPs based on operational monitoring data provided by the Planning Function • Sits in the Planning function of the CIMT. • Liaises with other CIMT functions to deliver required logistics, resources and operational support from Woodside to support the Environmental Service Provider in delivering on the SMPs. Acts as the conduit for advice from the SMP Lead/Manager to the Environmental Service Provider • Manages the Environmental Service Provider's implementation of the SMPs • Liaises with the Environmental Service Provider on delivery of the SMPs • Arranges all contractual matters, on behalf of Woodside, associated with the Environmental Service Provider's delivery of the SMPs.

Environmental Service Provider Roles		
SMP standby contractor: SMP Duty Manager/ Project Manager/ SMP Liaison Officer	Onshore	• Coordinates the delivery of the SMPs • Provides costings, schedule and progress updates for delivery of SMPs • Determines the structure of the Environmental Service Provider's team to necessitate delivery of the SMPs • Verifies that HSE Plans, detailed sampling plans and other relevant deliverables are developed and implemented for delivery of the SMPs • Directs field teams to deliver SMPs • Arranges all contractual matters, on behalf of Environmental Service Provider, associated with the delivery of the SMPs to Woodside • Manages sub-consultant delivery to Woodside • Provides required personnel and equipment to deliver the SMPs
SMP Field Teams	Offshore – Monitoring Locations	• Delivers the SMPs in the field consistent with the detailed sampling plans and HSE requirements, within time and budget. • Early communication of time, budget, HSE risks associated with delivery of the SMPs to the Environmental Service Provider – Project Manager • Provides start up, progress and termination updates to the Environmental Service Provider – Project Manager (will be led in-field by a party chief).

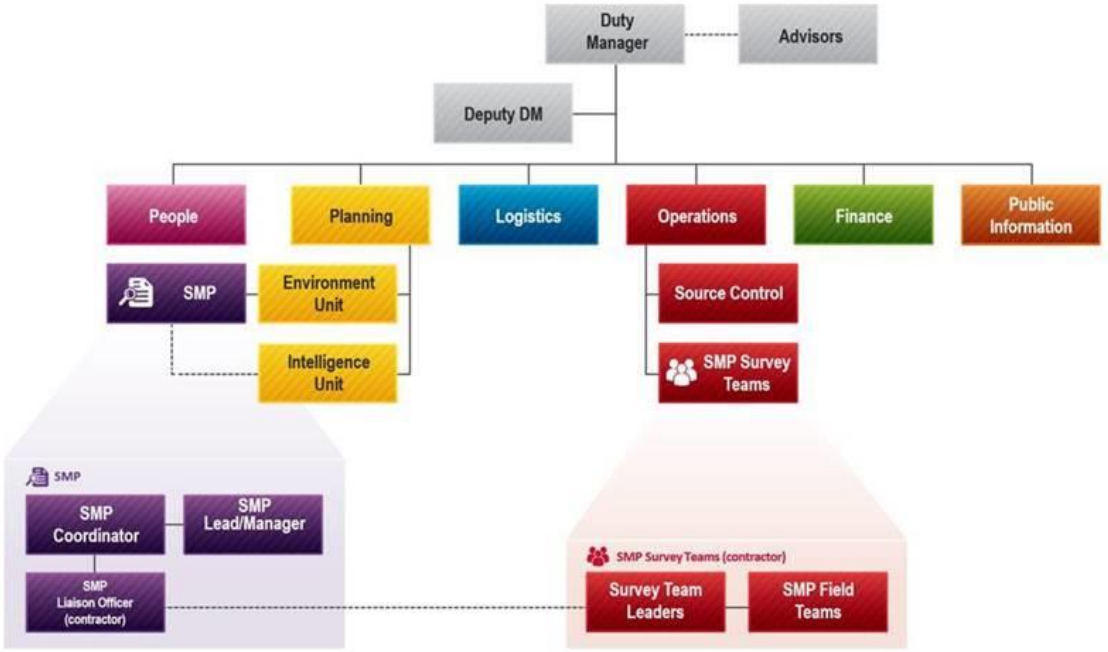

Figure C-1: Woodside Oil Spill Scientific Monitoring Program Delivery Team and Linkage to Corporate Incident Management Team (CIMT) organisational structure.

Table C-2: Oil Spill Environmental Monitoring: Scientific Monitoring Program - Objectives, Activation Triggers and Termination Criteria

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
Scientific monitoring program 1 (SM01) **Assessment of Hydrocarbons in Marine Waters**	SM01 will detect and monitor the presence, extent, persistence and properties of hydrocarbons in marine waters following the spill and the response. The specific objectives of SM01 are as follows: • Assess and document the extent, severity and persistence of hydrocarbon contamination with reference to observations made during surveillance activities and / or in-water measurements made during operational monitoring; and • Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs.	SM01 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors	SM01 will be terminated when: • Operational monitoring data relating to observations and / or measurements of hydrocarbons on and in water have been compiled, analysed and reported; and • The report provides details of the extent, severity and persistence of hydrocarbons which can be used for analysis of impacts recorded for sensitive receptors monitored under other SMPs. SMP monitoring of sensitive receptor sites: • Concentrations of hydrocarbons in water samples are below NOPSEMA guidance note (2019[9]) concentrations of 1 g/m^2 for floating, 10 ppb for entrained and dissolved; and • Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in water have been documented at sensitive receptor sites monitored under other SMPs.
Scientific monitoring program 2 (SM02) **Assessment of the Presence, Quantity and Character of Hydrocarbons in Marine Sediments**	SM02 will detect and monitor the presence, extent, persistence and properties of hydrocarbons in marine sediments following the spill and the response. The specific objectives of SM02 are as follows: • Determine the extent, severity and persistence of hydrocarbons in marine sediments across selected sites where hydrocarbons were observed or recorded during operational monitoring; and • Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs.	SM02 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • Response activities have ceased; and • Operational monitoring results made during the response phase indicate that shoreline, intertidal or sub-tidal sediments have been exposed to surface, entrained or dissolved hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation).	SM02 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: • Concentrations of hydrocarbons in sediment samples are below ANZECC/ ARMCANZ (2013[10]) sediment quality guideline values (SQGVs) for biological disturbance; and • Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in sediments have been documented.
Scientific monitoring program 3 (SM03) **Assessment of Impacts and Recovery of Subtidal and Intertidal Benthos**	The objectives of SM03 are: • Characterize the status of intertidal and subtidal benthic habitats and quantify any impacts to functional groups, abundance and density that may be a result of the spill; and • Determine the impact of the hydrocarbon spill and subsequent recovery (including impacts associated with the implementation of response options). Categories of intertidal and subtidal habitats that may be monitored include: • Coral reefs • Seagrass • Macro-algae • Filter-feeders SM03 will be supported by sediment contamination records (SM02) and characteristics of the spill derived from OMPs.	SM03 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • As part of a pre-emptive assessment of PBAs of receptor locations identified by time to hydrocarbon contact >10 days, to target receptors and sites where it is possible to acquire pre-hydrocarbon contact baseline; and • Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) for subtidal and intertidal benthic habitat.	SM03 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: • Overall impacts to benthic habitats from hydrocarbon exposure have been quantified. • Recovery of impacted benthic habitats has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 4 (SM04)	The objectives of SM04 are: • Characterize the status of mangroves (and associated salt marsh habitat) at shorelines exposed/contacted by spilled hydrocarbons;	SM04 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows:	SM04 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of:

[9] NOPSEMA (2019) Bulletin #1 – Oil spill modelling – April 2019, https://www.nopsema.gov.au/assets/Bulletins/A652993.pdf
[10] Simpson SL, Batley GB and Chariton AA (2013). Revision of the ANZECC/ARMCANZ Sediment Quality Guidelines. CSIRO and Water Science Report 08/07. Land and Water, pp. 132.

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
Assessment of Impacts and Recovery of Mangroves / Saltmarsh	• Quantify any impacts to species (abundance and density) and mangrove/saltmarsh community structure; and • Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options). SM03 will be supported by sediment sampling undertaken in SM02 and characteristics of the spill derived from OMPs.	• As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; and • Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) for mangrove/saltmarsh habitat.	• Impacts to mangrove and saltmarsh habitat from hydrocarbon exposure have been quantified. • Recovery of impacted mangrove/saltmarsh habitat has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 5 (SM05) **Assessment of Impacts and Recovery of Seabird and Shorebird Populations**	The Objectives of SM05 are to: • Collate and quantify impacts to avian wildlife from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population level; and • Undertake monitoring to quantify and assess impacts of hydrocarbon exposure to seabirds and shorebird populations at targeted breeding colonies / staging sites / important coastal wetlands where hydrocarbon contact was recorded.	SM05 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; • Operational monitoring predicts shoreline contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at important bird colonies / staging sites / important coastal wetland locations; or • Records of dead, oiled or injured bird species made during the hydrocarbon spill or response.	SM05 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Impacts to seabird and shorebird populations from hydrocarbon exposure have been quantified. • Recovery of impacted seabird and shorebird populations has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 6 (SM06) **Assessment of Impacts and Recovery of Nesting Marine Turtle Populations**	The objectives of SM06 are to: • To quantify impacts of hydrocarbon exposure or contact on marine turtle nesting populations (including impacts associated with the implementation of response options); • Collate and quantify impacts to adult and hatchling marine turtles from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population levels (including impacts associated with the implementation of response options); .and • Undertake monitoring to quantify and assess impacts of hydrocarbon exposure to nesting marine turtle populations at known rookeries (including impacts associated with the implementation of response options).	SM06 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring has: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; • Predicted shoreline contact of hydrocarbons (at or above 0.5 g/m² surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at known marine turtle rookery locations; or • Records of dead, oiled or injured marine turtle species made during the hydrocarbon spill or response.	SM06 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Impacts to nesting marine turtle populations from hydrocarbon exposure have been quantified. • Recovery of impacted nesting marine turtle populations has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 7 (SM07) **Assessment of Impacts to Pinniped Colonies including Haul-out Site Populations**	The objectives of SM07 are to: • Quantify impacts on pinniped colonies and haul-out sites as a result of hydrocarbon exposure/contact. • Collate and quantify impacts to pinniped populations from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population levels.	SM07 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring has: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days;	SM07 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Impacts to pinniped populations from hydrocarbon exposure have been quantified. • Recovery of pinniped populations has been evaluated.

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
		• Identified shoreline contact of hydrocarbons ((at or above 0.5 g/m² surface, ≥5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m² for shoreline accumulation) at known pinniped colony or haul-out site(s) (i.e. most northern site is the Houtman Abrolhos Islands); or • Records of dead, oiled or injured pinniped species made during the hydrocarbon spill or response.	• Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 8 (SM08) **Desk-Based Assessment of Impacts to Other Non-Avian Marine Megafauna**	The objective of SM08 is to provide a desk-based assessment which collates the results of OM02 and OM05 where observations relate to the mortality, stranding or oiling of mobile marine megafauna species not addressed in SM06 or SM07, including: • Cetaceans; • Dugongs; • Whale sharks and other shark and ray populations; • Sea snakes; and • Crocodiles. The desk-based assessment will include population analysis to infer potential impacts to marine megafauna species populations.	SM08 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring reports records of dead, oiled or injured non-avian marine megafauna during the spill/ response phase.	SM08 will be terminated when the results of the post-spill monitoring have quantified impacts to non-avian megafauna. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 9 (SM09) **Assessment of Impacts and Recovery of Marine Fish associated with SM03 habitats**	The objectives of SM09 are: • Characterise the status of resident fish populations associated with habitats monitored in SM03 exposed/contacted by spilled hydrocarbons; • Quantify any impacts to species (abundance, richness and density) and resident fish population structure (representative functional trophic groups); and • Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options).	SM09 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented with SMO3.	SM09 will be undertaken and terminated concurrent with monitoring undertaken for SM03, as per the SMP termination criteria process • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 10 (SM10) **SM10 - Assessment of physiological impacts important fish and shellfish species (fish health and seafood quality/safety) and recovery**	SM10 aims to assess any physiological impacts to important commercial fish and shellfish species (assessment of fish health) and if applicable, seafood quality/safety. Monitoring will be designed to sample key commercial fish and shellfish species and analyse tissues to identify fish health indicators and biomarkers, for example: • Liver Detoxification Enzymes (ethoxyresorufin-O-deethylase (EROD) activity) • PAH Biliary Metabolites • Oxidative DNA Damage • Serum SDH • Other physiological parameters, such as condition factor (CF), liver somatic index (LSI), gonado-somatic index (GSI) and gonad histology, total weight, length, condition, parasites, egg development, testes development, abnormalities. • Seafood tainting may be included (where appropriate) using applicable sensory tests to objectively assess targeted finfish and shellfish species for hydrocarbon contamination. Results will be used to make inferences on the health of commercial fisheries and the potential magnitude of impacts to fishing industries.	SM10 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring (OM01, OM02 and OM05) indicates the following: • The hydrocarbon spill will or has intersected with active commercial fisheries or aquaculture activities. • Commercially targeted finfish and/or shellfish mortality has been observed/recorded. • Commercial fishing or aquaculture areas have been exposed to hydrocarbons (≥0.5 g/m² surface and ≥5 ppb for entrained/dissolved hydrocarbons); and • Taste, odour or appearance of seafood presenting a potential human health risk is observed.	SM10 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Physiological impacts to important commercial fish and shellfish species from hydrocarbon exposure have been quantified. • Recovery of important commercial fish and shellfish species from hydrocarbon exposure has been evaluated. • Impacts to seafood quality/safety (if applicable) have been assessed and information provided to the relevant persons/ organisations • and regulators for the management of any impacted fisheries. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.

Activation Triggers and Termination Criteria

Scientific monitoring program Activation

The Woodside oil spill scientific monitoring team will be stood up immediately with the occurrence of a hydrocarbon spill (actual or suspected) Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors via the first strike plan for the petroleum activity programme. The presence of any level of hydrocarbons in the marine environment triggers the activation of the oil spill scientific monitoring program (SMP). This is to ensure the full range of eventualities relating to the environmental, socio-economic and health consequences of the spill are considered in the planning and execution of the SMP. The activation process also takes into consideration the management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), CMRs, State Marine Parks, other protected area designations (e.g., State nature reserves) and Matters of National Environmental Significance (including listed species under part 3 of the EPBC Act) potentially exposed to hydrocarbons. With the first 24-48 hours of a spill event, such information will be sourced and evaluated as part of the SMP planning process guided by Appendix D (identified receptors vulnerable to hydrocarbon contact), the information presented in the Existing Environment section of the EP as well as other information sources such as the Woodside Baseline Environmental Studies Database (Link).

The starting point for decision-making on what SMPs are activated and spatial extent of monitoring activities will be based on the predictive modelling results (OM01) in the first 24-48 hours until more information is made available from other operational monitoring activities such as aerial surveillance and shoreline surveys. Pre-emptive Baseline Areas (WHA, CMRs and State Marine Parks encompassing key ecological and socio-economic values) are a key focus of the SMP activation decision-making process, particularly, in the early spill event/response phase. As the operational monitoring progresses and further situational awareness information becomes available, it will be possible to understand the nature and scale of the spill. The SMP activation and implementation decision-making will be revisited on a daily basis to account for the updates on spill information. One of the priority focus areas in the early phase of the incident will be to identify and execute pre-emptive SMP assessments at key receptor locations, as required. The SMP activation and implementation decision tree is presented in Figure C-2.

Scientific monitoring Program Termination

The basis of the termination process for the active SMPs (SMPs 1-10) will include quantification of impacts, evaluation of recovery for the receptor at risk and consultation with relevant authorities, persons and organisations. Termination of each SMP will not be considered until the results (as presented in annual SMP reports for the duration of each program) indicate that the target receptor has returned to pre-spill condition.

Once the SMP results indicate impacted receptor(s) have returned to pre-spill condition (as identified by Woodside) a termination decision-making process will be triggered and a number of steps will be undertaken as follows:

- Woodside will engage expert opinion on whether the receptor has returned to pre-spill condition (based on monitoring data). Subject Matter Expert (SMEs) will be engaged (via the Woodside SME scientific monitoring terms of reference) to review program outcomes, provide expert advice and recommendations for the duration of each SMP.
- Where expert opinion agrees that the receptor has returned to pre-spill condition, findings will then be presented to the relevant authorities, persons and organisations (as defined by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulation 11A). Identification of relevant persons/ organisations, planning and engagement will be managed by Woodside's Reputation Functional Support Team (FST) and follow the Stakeholder Management FST. These guidelines outline the FST roles and responsibilities, competencies, communications and planning processes. An assessment of the merits of any objection to termination will be documented in the SMP final report.

- Woodside will decide on termination of SMP based on expert opinion and merits of any objections from relevant persons/ organisations. The final report following termination will include: monitoring results, expert opinion and consultation including merits of any objections.
- Termination of SMPs will also consider applicable management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), CMRs, State Marine Parks, other protected area designations (e.g., State nature reserves) and Matters of National Environmental Significance (including listed species under part 3 of the EPBC Act).

The SMP termination decision-making process will be applied to each active SMP and an iterative process of decision steps continued until each SMP has been terminated (refer to decision-tree diagram for SMP termination criteria, Figure C-3).

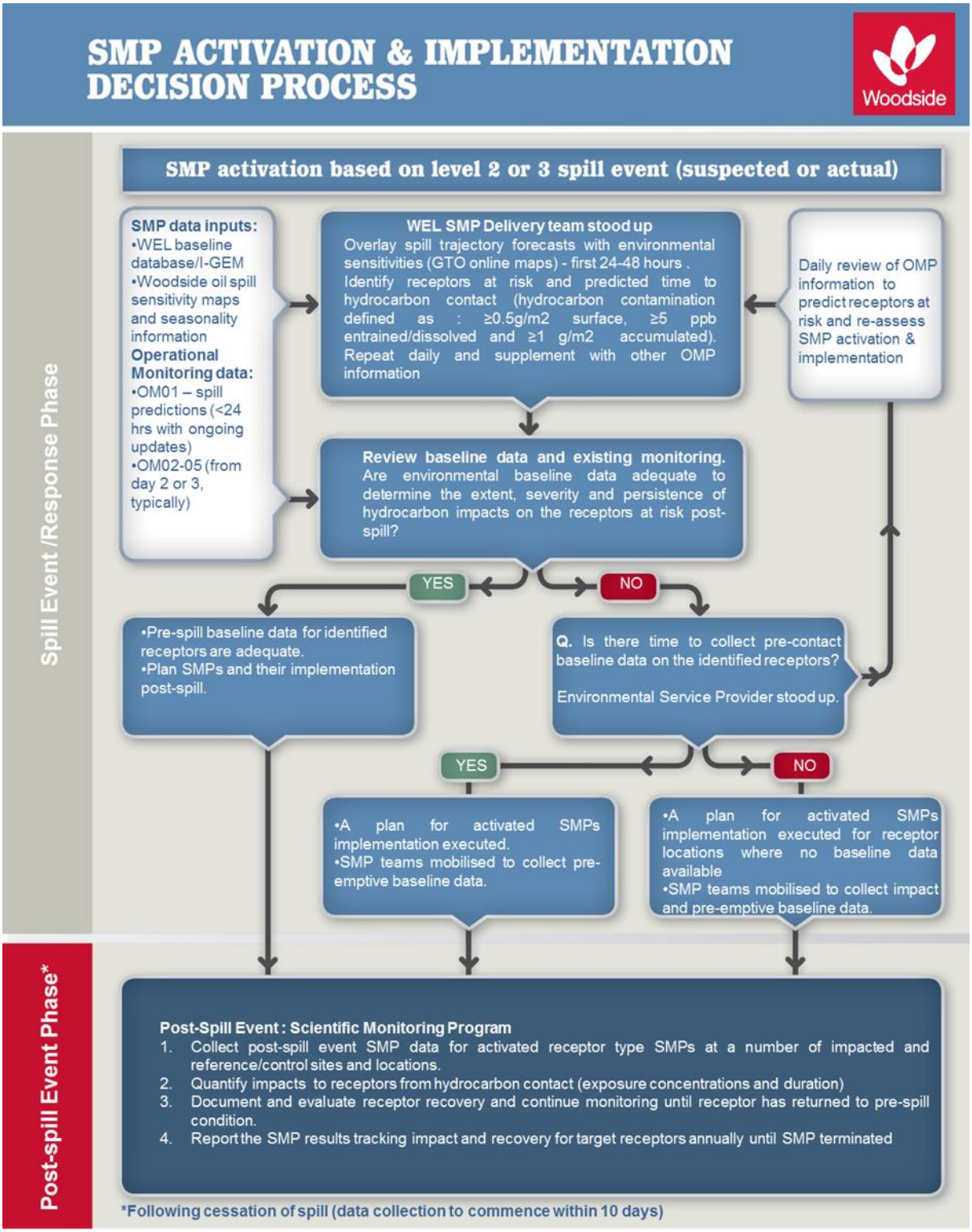

Figure C-2: Activation and Implementation Decision-tree for Oil Spill Environmental Monitoring

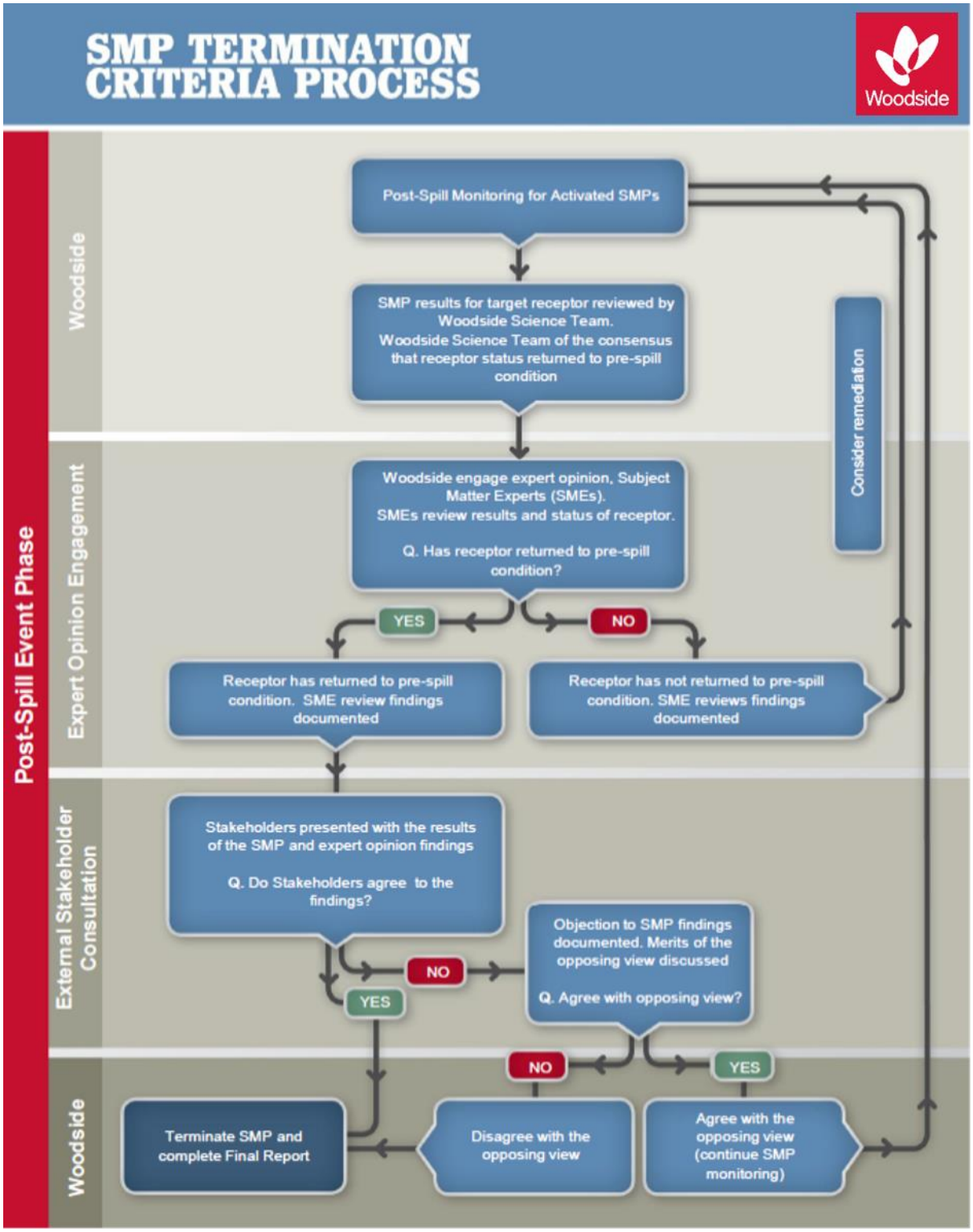

Figure C-3: Termination Criteria Decision-tree for Oil Spill Environmental Monitoring

Receptors at Risk and Baseline Knowledge

In order to assess the baseline studies available and suitability for oil spill scientific monitoring, Woodside maintains knowledge of environmental baseline studies through the upkeep and use of its Environmental Knowledge Management System.

Woodside's Environmental Knowledge Management System is a centralised platform for scientific information on the existing environment, marine biodiversity, Woodside environmental studies, key environmental impact topics, key literature and web-based resources. The system comprises a number of data directories and an environmental baseline database, as well as folders within the 'Corporate Environment' server space. The environmental baseline database was set up to support Woodside's SMP preparedness and as a SMP resource in the event of an unplanned hydrocarbon spill. The environmental baseline database is subject to updates including annual reviews completed as part of SMP standby contract. This database is accessed pre-PAP to identify Pre-emptive Baseline Areas (PBAs) where hydrocarbon contact is predicted to occur <10 days.

In addition to Woodside's Environmental Knowledge Management System, it is acknowledged that many relevant baseline datasets are held by other organisations (e.g. other oil and gas operators, government agencies, state and federal research institutions and non-governmental organisations). In order to understand the present status of environmental baseline studies a spatial environmental metadata database for Western Australia (Industry-Government Environmental Metadata, I-GEM) was established. IGEM is a collaboration comprising oil and gas operators (including Woodside), government and research agencies and other organisations. IGEM held data were integrated into the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA)[11] in 2020. The Index of Marine Surveys for Assessments (IMSA) is an online portal for information about marine-based environmental surveys in Western Australia. IMSA is a project of the Department of Water and Environmental Regulation (the department) for the systematic capture and sharing of marine data created as part of an environmental impact assessment (EIA).

In the event of an unplanned hydrocarbon release, Woodside intends to interrogate the information on baseline studies status as held by the various databases (e.g. Woodside Environmental Knowledge Management System, IMSA and other sources of existing baseline data) to identify Pre-emptive Baseline Areas (PBAs), i.e., receptors at risk where hydrocarbon contact is predicted to be >10 days, and baseline data can be collected before hydrocarbon contact.

Reporting

For the scientific monitoring program relevant regulators will be provided with:

- Annual reports summarising the SMPs deployed and active, data collection activities and available findings; and
- Final reports for each SMP summarising the quantitative assessment of environmental impacts and recovery of the receptor once returned to pre-spill condition and termination of the monitoring program.

The reporting requirements of the scientific monitoring program will be specific to the individual SMPs deployed and terms of responsibilities, report templates, schedule, QA/QC and peer-review will be agreed with the contractors engaged to conduct the SMPs. Compliance and auditing mechanisms will be incorporated into the reporting terms.

[11] https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort

ANNEX D: MONITORING PROGRAM AND BASELINE STUDIES FOR THE PETROLEUM ACTIVITIES PROGRAM

Table D-1: Oil Spill Environmental Monitoring – scientific monitoring program scope for the Petroleum Activities Program based on worst case credible spill CS-01 for WA-61-L and WA-62-LSubsea Infrastructure Installation

Receptors to be Monitored	Applicable SMP	Receptor Areas - Potential Impact and Reference Scientific Monitoring Sites (marked X)																																						
		Kimberley AMP	Agro-Rowley Terrace AMP	Montebello AMP	Dampier AMP	Carnarvon Canyon AMP	Ningaloo AMP	Gascoyne AMP	Shark Bay Open Ocean (including AMP)	Abrolhos AMP	Jurien AMP	Two Rocks AMP	Perth Canyon AMP	Geographe AMP	South-west Corner AMP	Ashmore Reef and AMP	Seringapatam Reef	Scott Reef (North and South)	Mermaid Reef and AMP	Clerke Reef and State Marine Park	Imperieuse Reef and State Marine Park	Rankin Bank	Glomar Shoals	Rowley Shoals (including Sate Maine Park)	Fantome Shoal	Adele Island	Lacepede Islands	Montebello Islands (including State Marine Park)	Lowendal Islands (including State Nature Reserves)	Barrow Island (including State Nature Reserves, State Marine Park and Marine Management Area)	Muiron Islands (WHA, Marine Management Area)	Pilbara Islands - Southern Island Group (Serrurier, Thevenard and Bessieres Islands - State Nature Reserves)	Pilbara Islands - Northern Island Group (Sandy Island Passage Islands - State nature reserves)	Abrolhos Islands	Kimberley Coast	Dampier Peninsula	Northern Pilbara Shoreline	Ningaloo Coast (North/North West Cape, Middle and South) (WHA, and State Marine Park)	Shark Bay - Open Ocean Coast	Shark Bay (WHA, State Marine Park)	Ngari Capes State Marine Park
Habitat																																								
Water Quality	SM01	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marine Sediment Quality	SM02	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Coral Reef	SM03	X		X												X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	
Seagrass / Macro-Algae	SM03	X									X					X	X	X									X	X	X	X	X	X	X	X	X	X	X	X	X	X
Deeper Water Filter Feeders	SM03	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X						X		
Mangroves and Saltmarsh	SM04																											X						X	X	X	X	X		X	
Species																																								
Sea Birds and Migratory Shorebirds (significant colonies / staging sites / coastal wetlands)	SM05	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marine Turtles (significant nesting beaches)	SM06	X	X	X	X		X	X	X							X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	
Pinnipeds (significant colonies / haul-out sites)	SM07									X	X	X			X																									X
Cetaceans - Migratory Whales	SM08	X	X	X	X		X	X	X	X	X	X	X	X	X			X									X	X	X	X	X			X	X	X		X	X
Oceanic and Coastal Cetaceans	SM08	X	X	X	X		X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dugongs	SM08	X							X							X												X	X	X	X	X	X		X	X	X	X	X	
Sea Snakes	SM08	X		X	X			X	X	X						X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	
Whale Sharks	SM08			X			X	X										X										X	X	X	X							X			
Other Shark and Ray Populations	SM08, SM09	X	X	X	X		X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Fish Assemblages	SM09	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Socio-economic																																								
Fisheries - Commercial	SM10		X	X	X	X	X	X	X	X	X	X										X	X	X	X			X	X	X		X	X	X	X	X	X	X	X	X
Fisheries - Traditional	SM10															X	X	X									X												X		
Tourism (incl. recreational fishing)	SM10	X		X			X	X	X		X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X

	Receptor areas identified as Pre-emptive Baseline Areas (based on criteria of surface contact and/or entrained hydrocarbon contact ≤10 days (Offshore Australian Marine Parks contacted by hydrocarbons in this timeframe also noted)
	Receptor areas identified as Pre-Emptive Basline Areas in the response phase >10 days (based on criteria of surface contact and/or entrained hydrocarbon contact >10 days)
	Receptor areas that may be identified as impact or reference sites in the event of major hydrocarbon release and would be identified as part of the SMP planning process

Table D-2: Baseline studies for the SMPs applicable to identified pre-emptive baseline areas for the petroleum activities program

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Ningaloo and Muiron Islands	Montebello AMP
Benthic Habitat (Coral Reef)	**SM03** Quantitative assessment using image capture using either diver held camera or towed video. Post analysis into broad groups based on taxonomy and morphology.	**Studies:**	
		1. DBCA LTM Ningaloo Reef program: 1991-ongoing. 2. AIMS/DBCA 2014 Baseline Ningaloo and Muiron Islands Survey – repeat and expansion on the LTM (Co-funded survey: Woodside and AIMS). 3. Pilbara Marine Conservation Partnership. 4. WAMSI LTM Study: Ningaloo Research node: 2009 -10 over the length of Ningaloo reef system (with a focus on coral and fish recruitment). 5. Ningaloo Outlook (CSIRO) - Shallow and Deep Reefs Program (2015-ongoing). 6. Ningaloo Collaboration Cluster: Habitats of the Ningaloo Reef and adjacent coastal areas determined through hyperspectral imagery 7. Allen Coral Atlas	Coral Reefs & Filter Feeders 1. Montebello Marine Park, 2019, Identification and qualitative descriptions of benthic habitat. 2. Montebello Australian Marine Parks – 2019 – Baseline survey on benthic habitats. 3. Pluto Trunkline within Montebello Marine Park – Monitoring marine communities.
		Methods:	
		1. LTM transects, diver based (video) photo quadrats, specimen collection. 2. LTM sites, transects, diver-based video quadrat. 3. Diver video transects, still photography, video and in situ visual estimates from transects, quadrats, manta-tows, towed video and ROV. 4. Video point intercept transects recorded by towed video or diver hand-held video camera. 5. Video transects. 6. LTM transects, diver based (video) photo quadrat. 7. Combination of satellite imagery analysis and mapped/monitored areas.	1.ROV Transects 2. Benthic habitat mapping, multibeam acoustic swathing. 3. ROV video.
		References and Data:	
		1. DBCA unpublished data. DATAHOLDER: DBCA 2. AIMS 2015. DATAHOLDER: AIMS. 3. Pilbara Marine Conservation Partnership DATAHOLDER: CSIRO 4. Depczynski et al. 2011 DATAHOLDER: AIMS, DBCA and WAMSI. 5. CSIRO 2019 – Ningaloo Outlook Program 6. Murdoch University – HyVista Corporation – April and May 2006 (Kobryn et al. 2013 and 2022) 7. https://allencoralatlas.org/atlas/#7.58/-21.5563/114.9133 (accessed 18/05/2022)	1. Advisian 2019 2. Keesing 2019 3. McLean et al. 2019

Benthic Habitat (Seagrass and Macro-algae)	**SM03** Quantitative assessment using image capture using either diver held camera or towed video. Post analysis into broad groups based on taxonomy and morphology.	**Studies:**	
		1. Quantitative descriptions of Ningaloo sanctuary zones habitats types including lagoon and offshore areas – Cassata and Collins (2008). 2. CSIRO/BHP Ningaloo Outlook Program 3. Ningaloo Collaboration Cluster: Habitats of the Ningaloo Reef and adjacent coastal areas determined through hyperspectral imagery. 4. Australian Institute of Marine Science – CReefs: Ningaloo Reef Biodiversity Expeditions (2008-2010) 5. Combination of satellite imagery analysis and mapped/monitored areas.	N/A – see Table D-1
		Methods:	
		1. Video transects to ground truth aerial photographs and satellite imagery. 2. Diver video transects 3. LTM transects, diver based (video) photo quadrat. 4. LTM transects, diver based (video) photo quadrats, specimen collection 5. Satellite imagery, mapping and monitoring	N/A – see Table D-1
		References and Data:	
		1. Cassata and Collins 2008. DATAHOLDER: Curtin University – Applied Geology. 2. CSIRO – Ningaloo Outlook Program 3. Murdoch University – HyVista Corporation – April and May 2006 (Kobryn et al. 2013 and 2022) 4. AIMS (2010) - http://www.aims.gov.au/creefs 5. https://allencoralatlas.org/atlas/#7.58/-21.5563/114.9133 (accessed 18/05/2022)	N/A – see Table D-1
Benthic Habitat (Deeper Water Filter Feeders)	**SM03** Quantitative assessment using image capture using towed video. Post analysis into broad groups based on taxonomy and morphology.	**Studies:**	
		1. WAMSI 2007 deep-water Ningaloo benthic communities study, Colquhoun and Heyward (2008). 2. CSIRO/BHP Ningaloo Outlook Program - Deep reef themes	See SM01
		Methods:	
		1. Towed video and benthic sled (specimen sampling). 2. Sidescan sonar and AUV transects	See SM01
		References and Data:	
		1. Colquhoun and Heyward (eds) 2008.DATAHOLDER: WAMSI, AIMS. 2. CSIRO – Ningaloo Outlook Program	See SM01
Mangroves and Saltmarsh	**SM04** Aerial photography and satellite imagery will be used in conjunction with field surveys to map the range and distribution of mangrove communities.	**Studies:**	
		1. Woodside Sentinel Imagery – May 2017. EOMAP atmospheric correction and mangrove and land cover classification 2. Woodside hold Rapid Eye imagery of the Ningaloo Reef and coastal area. 3. Hyperspectral survey (2006) of Ningaloo Reef and coastal area (not yet analysed for Mangroves). 4. North West Cape sensitivity mapping 2012 included Mangrove Bay. 5. Global mangrove distribution as mapped by the USGS and located on UNEP's Ocean Data viewer	N/A – see Table D-1
		Methods:	
		1. Sentinel HR imagery of coastal margin from the Abrolhos Islands to Dampier Archipelago (including Montebellos) 2. Rapid Eye imagery – High resolution satellite imagery from October/November/December 2011. 3. Remote sensing – acquisition of HyMap airborne hyperspectral imagery and ground truthing data collection. 4. Reconnaissance surveys of the shorelines of the North West Cape and Muiron Islands. 5. Remote sensing study of global mangrove coverage	N/A – see Table D-1
		References and Data:	

		1. EOMPA, 2017 DATAHOLDER: Woodside 2. AAM 2014. DATAHOLDER: Woodside. 3. Kobryn et al. 2013 and 2022 DATAHOLDER: Murdoch University, AIMS; Woodside. 4. Joint Carnarvon Basin Operators, 2012. DATAHOLDER: Woodside Apache Energy Ltd. 5. http://data.unep-wcmc.org/	N/A – see Table D-1
Seabirds	**SM05** Visual counts of breeding seabirds, nest counts, intertidal bird counts at high tide.	**Studies:**	
		1. LTM Study of marine and shoreline birds: 1970-2011. 2. LTM of shorebirds within the Ningaloo coastline (Shorebirds 2020). Available via Birdlife Australia 3. Exmouth Sub-basin Marine Avifauna Monitoring Program (Quadrant Energy/Santos) 4. Integrated Shearwater Monitoring Program (1994-2016). 5. Seabird and Shorebird baseline studies, Nignaloo Region – Report on January 2018 bird surveys 6.Wedge-tailed shearwater foraging behaviour in the Exmouth Region	Present, in open water, no breeding habitat.
		Methods:	
		1. Counts of nesting areas, counts of intertidal zone during high tide. 2. The Shorebirds 2020 database comprises the most complete shorebird count data available in Australia. The data have been collected by volunteer counters and BirdLife Australia staff for approximately 150 roosting and feeding sites, mainly in coastal Australia. The data go back as far as 1981 for key areas. 3. The Exmouth Sub-basin Marine Avifauna Monitoring Program undertook a detailed assessment of seabird and shorebird use in the Exmouth Sub-basin. Four aerial surveys and four island surveys were conducted between February 2013 and January 2015 for this Program, inclusive of the mainland coasts, offshore islands and a 2500km2 area of ocean adjacent to the Exmouth Sub-basin 4. Shorebird counts, Shearwater Burrow Density 5. Telemetry (GPS and satellite trackers)	N/A
		References and Data:	
		1. Johnstone et al. 2013. DATAHOLDER: WA MUSEUM. AMOSC/DBCA (DPaW)2014. 2. .BirdLife Australia Shorebirds 2020 programme (http://www.birdlife.org.au/projects/shorebirds-2020). 3. Surman and Nicholson, 2015 4. BirdLife Australia: Dataholder: BirdLife Australia, Woodside 5. UWA Dataholder: UWA and Birdlife Australia	N/A
Turtles	**SM06** Beach surveys (recording species, nests, and false crawls).	**Studies:**	
		1. Exmouth Islands Turtle Monitoring Program. 2. Ningaloo Turtle Program 3. Turtle activity and nesting on the Muiron Islands and Ningaloo Coast (2018). 4. Spatial and temporal use of inter-nesting habitat by sea turtles along the Murion Islands and Ningaloo Coast – 2018-2019	Present, in open water, no nesting habitats.
		Methods:	
		1. Astron (on behalf of Santos) to address a gap in the knowledge of turtle numbers at key locations (offshore islands within the region) that are not currently part of an existing monitoring programs (e.g. the NTP). Field surveys were conducted in October 2013 and January 2014. Surveys were conducted on 12 islands, with each island surveyed once (with the exception of Beach 8 at North Muiron Island) and all tracks counted. 2. Long term trends in marine turtle populations, beach surveys, track counts, best location, mortality counts. 3. On-beach monitoring and aerial surveys. 4. Tagging (satellite transmitter), analysis of internesting, migration and foraging grounds movements and behaviour.	N/A
		References/Data:	

		1.Santos – Report. 2. NTP Annual Reports DATAHOLDERS: DBCA. Reports available at http://www.ningalooturtles.org.au/media_reports.html 3.Rob et al. 2019 DATAHOLDER: DBCA 4.Tucker et al. 2019 DATAHOLDER: DBCA	N/A
Fish	SM09 Baited Remote Underwater Video Stations (BRUVS), Visual Underwater Counts (VUC), Diver Operated Video (DOV).	Studies:	
		1. AIMS/DBCA 2014 Baseline Ningaloo Survey – repeat and expansion on the LTM (Co-funded survey: Woodside and AIMS). 2. Demersal fish populations – baseline assessment (AIMS/WAMSI). 3. DBCA study measured Species Richness, Community Composition, and Target Biomass, through UVC. BRUVS studies determining max N, Species Richness, and Biomass. 4. Pilbara Marine Conservation Partnership Stereo BRUVS in shallow water (~10m) in 2014 in northern region of the Ningaloo Marine Park, in shallow water (~10m) inside the lagoonal reef of the Ningaloo Marine Park in 2016, in deep water (~40m) across the length of the Ningaloo Marine Park in 2015, in shallow water outside of Ningaloo Reef from Waroora to Jurabi in 2015 and offshore of the Muiron Islands in 2015. 5. Elasmobranch faunal composition of Ningaloo Marine Park. 6. Juvenile fish recruitment surveys at Ningaloo reef. 7. Demersal fish assemblage sampling method comparison 8. Ningaloo Outlook (CSIRO) - Shallow and Deep Reefs Program	1. CSIRO – Fish Diversity. 2. Fish species richness and abundance.
		Methods:	
		1. UVC surveys. 2. BRUVS Study with 304 video samples at three specific depth ranges (1-10 m, 10-30 m and 30-110m). 3. UVC surveys. 4. Stereo BRUVS 5. Snorkel and Scuba surveys. 5. Underwater visual census. 6. Diver operated video. 7. Diver UVC. 8. Diver UVC, stereo BRUVs	1. Semi V Wing trawl net or an epibenthic sled. 2. ROV Video.
		References/Data:	
		1. AIMS 2014. DATAHOLDER: AIMS/Woodside. 2. Fitzpatrick et al. 2012. DATAHOLDERS: WAMSI, AIMS. 3. DBCA unpublished data. DATAHOLDER: DBCA/AIMS. 4. CSIRO Data DATAHOLDER: CSIRO Data Centre ([redacted]). 5. Stevens, J.D., P.R., White, W.T., McAuley, R.B., Meekan, M.G. 2009. 6. WAMSI unpublished data DATAHOLDER: AIMS 7. DATAHOLDER: WAMSI 8. CSIRO – Ningaloo Outlook 2020.	1. Keesing 2019. 2. McLean et al. 2019.

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ANNEX E: TACTICAL RESPONSE PLANS

TACTICAL RESPONSE PLANS
Exmouth
Mangrove Bay
Turquoise Bay
Yardie Creek
Muiron Islands
Jurabi to Lighthouse Beaches Exmouth
Ningaloo Reef - Refer to Mangrove/Turquoise bay and Yardie Creek
Exmouth Gulf
Shark Bay Area 1: Carnarvon to Wooramel
Shark Bay Area 2: Wooramel to Petite Point
Shark Bay Area 3: Petite Point to Dubaut Point
Shark Bay Area 4: Dubaut Point to Herald Bight
Shark Bay Area 5: Herald Bight to Eagle Bluff
Shark Bay Area 6: Eagle Bluff to Useless Loop
Shark Bay Area 7: Useless Loop to Cape Bellefin
Shark Bay Area 8: Cape Bellefin to Steep Point
Shark Bay Area 9: Western Shores of Edel Land
Shark Bay Area 10: Dirk Hartog Island
Shark Bay Area 11: Bernier and Dorre Islands
Abrohlos Islands: Pelseart Group
Abrohlos Islands: Wallabi Group
Abrohlos Islands: Easter Group
Dampier
Rankin Bank and Glomar Shoals
Barrow and Lowendal Islands
Pilbara Islands - Southern Island Group
Montebello Is - Stephenson Channel Nth
Montebello Is Champagne Bay and Chippendale channel
Montebello Is - Claret Bay
Montebello Is - Hermite/Delta Is Channel
Montebello Is - Hock Bay
Montebello Is - North and Kelvin Channel
Montebello Is - Sherry Lagoon Entrance
Withnell Bay
Holden Bay
King Bay
No Name Bay / No Name Beach
Enderby Is -Dampier
Rosemary Island - Dampier
Legendre Is - Dampier
Karratha Gas Plant

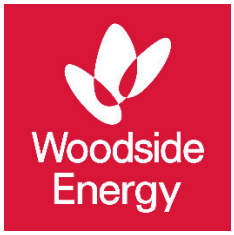
KGP to Whitnell Creek
KGP to Northern Shore
KGP Fire Pond and Estuary
KGP to No Name Creek
Broome
Sahul Shelf Submerged Banks and Shoals
Clerke Reef (Rowley Shoals)
Imperieuse Island (Rowley Shoals)
Mermaid Reef (Rowley Shoals)
Scott Reef
Oiled Wildlife Response
Exmouth
Dampier region
Shark Bay

APPENDIX E: NOPSEMA REPORTING FORMS

NOPSEMA Recordable Environmental Incident monthly Reporting Form: https://www.nopsema.gov.au/assets/Forms/A198750.doc

Report of an accident, dangerous occurrence or environmental incident: https://www.nopsema.gov.au/assets/Forms/N-03000-FM0831-Report-of-an-Accident-Dangerous-Occurrence-or-Environmental-Incident-Rev-8-Jan-2015-MS-Word-2010.docx

APPENDIX F: CONSULTATION



Scarborough WA-61-L & WA-62-L Subsea Infrastructure Installation Environment Plan Appendix F

Date: May 2023

Revision:1

TABLE OF CONTENTS

1. Consultation

1.1 Woodside Consultation Information Sheet & FAQ (September 2022) (sent to all relevant stakeholders)

Woodside Energy

STAKEHOLDER CONSULTATION

INFORMATION SHEET

September 2022

WA-61-L AND WA-62-L SUBSEA INFRASTRUCTURE INSTALLATION ENVIRONMENT PLAN

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Proposed Activity

Woodside (as Operator of the Scarborough Project) is planning to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

Proposed activities will include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers, which will be required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed in preparation for the arrival of the FPU.

A gravimentry survey is also planned to be undertaken in Permit Areas WA-61-L and WA-62-L to support Woodside's knowledge of the Scarborough reservoir. Subsea gravimetric surveys have been used for more than 20 years, mainly in the North Sea, to deliver a field-wide measurement of gravity. This information will provide direct measurement of water movement and saturation, as well as reservoir compaction and subsidence. Data from the baseline and future surveys will complement data acquired over time by Woodside from marine seismic surveys at the Scarborough location to support reservoir management and performance.

Proposed activities are planned to commence in the second half of 2023. Activities are planned to be undertaken in multiple campaigns, with an expected total duration of 18 months. When underway, activities will be 24 hours per day, seven days per week.

Project vessels

Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels. Details on vessels are included in **Table 1**.

Communication with Mariners

The Operational Area for activities includes a radius of:

- 1000 m around location of the outermost concrete pads.
- 1500 m around location of subsea infrastructure.
- 2000 m around future location of FPU.

A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Other marine users are permitted to use but should take care when entering the Operational Area and remain clear of the exclusion zone.

Assessment

Woodside has undertaken an assessment of the potential risks to the marine environment as well as the potential impacts to relevant persons arising from the planned activities. This assessment considers timing, duration and location of the planned activities.

A number of mitigation and management measures will be implemented and are summarised in **Table 3**. Further details will be provided in the EP, which is being developed to manage proposed activities.

In preparing the EP, our intent is to minimise environmental and social impacts associated with the proposed activities, and we are seeking any interest or comments you may have to inform our decision making.

Joint Venture

Following completion of the merger with BHP Petroleum on 1 June 2022, Woodside (Operator) owns 100% of the Scarborough (WA-61-L), North Scarborough (WA-62-L), Thebe (WA-63-R) and Jupiter (WA-61-R) gas fields.

We welcome your feedback by 21 October 2022.

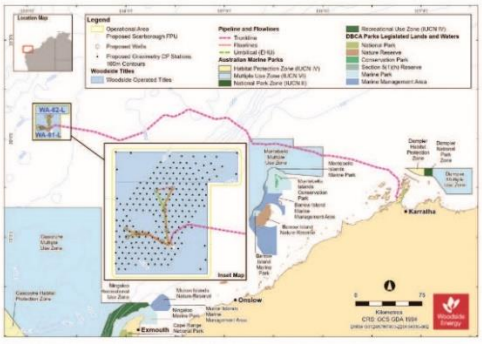


Figure 1. Petroleum Activity Program Operational Area. Details on the location of the proposed infrastructure are included in Table 2

Table 1. Activity summary

WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan	
Permit Area	• WA-61-L and WA-62-L
Approximate water depth	• ~ 900 - 1000 m

Commencement date	• Activities are planned to commence in H2 2023, with activities estimated to be completed in 18 months with activities occurring in multiple campaigns
	• The individual campaigns comprise:
	  • Installation of temporary concrete pads and conduct of the gravimetry baseline survey
	  • First campaign for installation of subsea umbilicals, risers, and flowlines
	  • FPU mooring pre-lay surveys and suction pile installation
	  • Second campaign for installation of subsea umbilicals, risers, and flowlines

Approximate estimated duration	• Approximately 18 months (cumulative) for the survey and installation activities

Infrastructure	• Pre-installation of the following infrastructure:
	  • 3 x flowlines
	  • 1 x riser base manifold and foundation
	  • 13 - 25 x mud mats
	  • 7 x in-line structures & 6 x flowline end terminations
	  • 9 x umbilical termination assemblies
	  • 3 x subsea distribution units/assemblies
	  • 16 x umbilicals and jumpers, additional flying leads
	  • 1 x trunkline spool and support
	  • 20 x mooring legs and 20 x suction piles for FPU
	  • Up to 265 concrete pads for future gravimetry surveys
	• Temporary installation of the following infrastructure and related activities:
	  • 1 x suction pile and leader wire for flowline lay initiation
	  • Installation aids (i.e. transponder arrays, frames)
	  • Wet-storing of dynamic umbilicals and risers
	  • Pre-progress and post-installation surveys
	  • Baseline gravimetry survey
	  • Pressure and leak testing
	  • Contingent activities including debris removal as required, transportation of equipment to field with tug and barge spread

Vessels	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Operational Areas and Exclusion zones	• The Operational Area for activities includes a radius of:
	  • 1000 m around location of the outermost concrete pads
	  • 1500 m around location of subsea infrastructure
	  • 2000 m around future location of FPU
	• Temporary 500 m exclusion zone around vessels to manage vessel movements
	• An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities

Distance to nearest town	• ~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier
Distance to nearest marine park/nature reserve	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)

Table 2. Summary of proposed installation locations

Structure	Approx. Water Depth (m)	Latitude	Longitude	Permit Area
For installation				
Start of Flowline A and associated infrastructure	~ 944	19° 55' 08.55"S	113° 13' 47.80"E	WA-61-L
End of Flowline A and associated infrastructure	~ 914	19° 46' 16.45"S	113° 11' 39.00"E	WA-61-L
Start of Flowline B and associated infrastructure	~ 945	19° 55' 12.11"S	113° 13' 45.17"E	WA-61-L
End of Flowline B and associated infrastructure	~ 919	19° 52' 30.84"S	113° 06' 39.90"E	WA-61-L
Start of Flowline C and associated infrastructure	~ 945	19° 55' 14.51"S	113° 13' 43.94"E	WA-61-L
End of Flowline C and associated infrastructure	~ 912	19° 53' 47.55"S	113° 06' 54.73"E	WA-61-L
Northern end of mooring array	~ 915	19° 54' 40.48"S	113° 14' 31.38"E	WA-61-L
Southern end of mooring array	~ 958	19° 56' 26.98"S	113° 14' 28.11"E	WA-61-L
Eastern end of mooring array	~ 955	19° 55' 34.48"S	113° 15' 26.04"E	WA-61-L
Western end of mooring array	~ 948	19° 55' 32.77"S	113° 13' 33.29"E	WA-61-L

Table 3. Summary of key risks and/or impacts and management measures

Potential Risk and/or impact	Mitigation and/or Management Measure
Planned	
Physical presence of infrastructure on seafloor causing interference or displacement	Consultation with relevant persons. For example, commercial fishers and their representative organisations, petroleum titleholders and government departments and agencies to inform decision making for the proposed activity and development of the EP. Relevant notifications prior to the commencement of activities. Infrastructure will be marked on marine charts.
Chemical use	Chemical use will be managed in accordance with Woodside and contractor chemical selection and approval procedures.
Marine discharges	Routine marine discharges will be managed according to legislative and regulatory requirements.
Seabed disturbance	No anchoring of project vessels. Attempted retrieval of dropped objects. Removal of temporary installation aids post-use, with verification of removal via ROV survey. Infrastructure to be installed within the design footprint using positioning technology.
Vessel interaction	Navigation aids and practices will be used as required by Maritime Regulations to minimise potential impact on other marine users. Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area. Stakeholder engagement activities will be conducted as part of the EP.

Potential Risk and/or impact	Mitigation and/or Management Measure
Waste generation	Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. Wastes will be managed and disposed of in a safe and environmentally responsible manner to prevent accidental loss to the environment. Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Emissions to atmosphere	Energy efficiency opportunities to be identified, implemented and tracked by contractors. Reporting of Greenhouse Gas emissions as required by regulatory requirements.
Underwater noise	Due to the low acoustic source levels associated with vessel operations and temporary nature of the activities, there will not be any significant impacts to marine species. Compliance with Environment Protection and Biodiversity Conservation (EPBC) Regulations 2000 (Cth) – Part 8 Division 8.1 (Regulation 8.05 and 8.06) Interacting with cetaceans.
Light emissions	Lighting will be limited to the minimum required for operational, navigational and safety requirements, with the exception of emergency events.
Unplanned	
Hydrocarbon release	Appropriate spill response plans, equipment and materials will be in place and maintained. Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment. Simultaneous Operations Plans will be used to prevent loss of marine vessel separation.
Marine fauna interactions	Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000 (Cth).
Introduction of invasive marine species	Vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. Compliance with Australian biosecurity requirements and guidance.
Chemical spills	Appropriate storage and handling of chemicals will be implemented to prevent spills to the marine environment; Appropriate spill response plans, equipment and materials will be in place and maintained.
Seabed disturbance	Appropriate lifting procedures will be in place; Any material dropped objects will undergo an impact assessment and be added to the equipment inventory.

Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to notify them of the activity and to obtain relevant feedback to inform its planning for proposed petroleum activities in the region.

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before 21 October 2022 via:

E: Feedback@woodside.com.au

Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities: **www.woodside.com**

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 they arise.

Please note that your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Woodside Energy

STAKEHOLDER CONSULTATION

INFORMATION SHEET

September 2022

WA-61-L AND WA-62-L SUBSEA INFRASTRUCTURE INSTALLATION ENVIRONMENT PLAN

Woodside (as Operator of the Scarborough Project) is planning to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, about 374 km west-northwest of Dampier, Western Australia.

These activities are required as part of the ongoing development of the Scarborough Project and in preparation for the arrival and integration of the Scarborough Floating Production Unit (FPU) into the offshore gas production system.

Woodside is undertaking stakeholder consultation to support the development of an Environment Plan (EP) for these planned activities in accordance with requirements under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Commonwealth).

Woodside consults relevant persons when preparing EPs to obtain appropriate feedback which informs planning for proposed petroleum activities, and builds upon Woodside's ongoing stakeholder consultation for its offshore petroleum activities in the region. This process may evolve throughout the life of the EP.

Information provided in this supplementary fact sheet has been developed based on previous stakeholder interest and feedback regarding other planned Scarborough Project activities and related EPs.

Frequently asked questions

Planned activities

What is involved with the subsea installation program?

Proposed activities include installation of flowlines, umbilicals, risers and supporting infrastructure, which will be required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Installation is planned to occur over two campaigns, each approximately three months in duration.

Suction piles and mooring legs will be wet stored on the seabed in preparation for the arrival of the FPU. Suction piles eliminate the need for driven piles, meaning that impulsive noise sources are eliminated and impacts on marine fauna minimised. Installation is planned to occur in a single campaign, approximately three months in duration.

Concrete pads will be installed for use in gravimetric surveys. Installation and a baseline survey is planned to occur across two campaigns, each approximately two months in duration. This activity is further described in a following FAQ.

Various pre- and post-installation surveys are planned to occur throughout the campaigns, as well as installation of positioning systems and installation aids to enable execution.

What are the potential environmental impacts from the subsea installation program?

Woodside has undertaken an assessment of the potential risks to the marine environment as well as the potential impacts to relevant persons arising from the planned activities. This assessment considers timing, duration and location of the planned activities.

Potential impacts to the marine environment from planned activities are expected to be slight and short-term given the nature and scale of installation and survey activities, as well as the ongoing presence of infrastructure.

Management measures to reduce impacts to "as low as reasonably practicable" (ALARP) are being developed in preparing the EP, and are summarised for key impacts and risks in the Consultation Information Sheet for this EP.

Woodside has also assessed potential impacts to other marine users in the region. Again, these are expected to be slight given the low likelihood of interaction with commercial or recreation fishers, operators of commercial shipping or other resource industry developers.

How do you determine what is an ALARP position for these activities?

The ALARP position refers to the reduction of risk to a level where no additional controls are reasonably practicable to implement. Measures to reduce risk can be ruled out only if the sacrifice (in money, time and effort) involved in taking them would be grossly disproportionate to the environmental benefits and/or the risk reduction.

The demonstration that environmental impacts and risk of the activities will be reduced to ALARP is a requirement of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (OPGGS Environment regulations) and will be included in the EP.

The OPGGS Environment regulations sets out the criteria for acceptance of an environment plan which includes a demonstration that environmental impacts and risks of the activity will be reduced to ALARP. These ALARP positions will be considered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) during the EP assessment process

Will installation activities impact listed species found at the Scarborough field location?

There are no new receptors or impacts identified for activities proposed to be managed under this EP beyond those identified in preparing the Offshore Project Proposal (OPP) for the Scarborough Project. The OPP was submitted to NOPSEMA for assessment and public comment in February 2019 and accepted in March 2020.

Aspects of the Scarborough Project that may impact on threatened species (seabird and migratory shorebirds, fish, marine mammals and marine reptiles) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) are provided in Table 6-2 of the OPP. Potential impacts are detailed in Section 7 of the OPP.

Preparation of the EP has also not identified any impacts to listed EPBC species greater than a potential slight, short term impact for proposed activities to be managed under this EP.

What is involved in undertaking the gravimetric survey?

Subsea gravimetric surveys have been used for more than 20 years, mainly in the North Sea, to deliver a field-wide measurement of gravity, enabling the monitoring of reservoir changes over the life of the field.

A baseline survey is proposed to be undertaken as part of activities for this EP and it is proposed that future surveys will collect data to assess changes in the intensity of the Earth's gravity within the Scarborough reservoir.

For Scarborough, up to 265 concrete pads are proposed to be installed on the seabed. The pads are conical-shaped, 1.6 m in diameter, and will be placed approximately 2 km apart, having a cumulative seabed footprint of approximately 500 m^2.

Following installation of the concrete pads, a baseline gravimetry survey is proposed to be conducted. The survey will involve temporary placement of a passive gravity meter sequentially on each concrete pad, and temporary deployment of tide gauges on the seabed by a survey vessel. Survey equipment will be recovered after the baseline survey is complete.

The concrete pads are designed to ensure that measurements are acquired at the same position on the seabed in consecutive surveys, such that observed time-lapse differences in gravity and water depth can be unambiguously attributed to the effect of hydrocarbon production. These will remain on the seabed until end of field life.

Will the gravimetric survey have an impact on marine fauna, such as whales?

Impacts from the gravimetric survey will be limited to those caused by the presence of vessels executing the scope of work. There are no additional noise, light or pollution impacts beyond those from standard installation/survey vessel and ROV operations.

Woodside is proposing multiple gravimetric surveys for the project. Will there be cumulative impacts from these surveys on marine fauna?

The initial baseline gravimetric survey is covered under this Environment Plan, and future surveys will be assessed as part of future approvals.

Due to the slight, short-term nature of the impacts, and estimated temporal intervals between gravimetric surveys (approximately 3-yearly), there will be no cumulative impacts caused by the gravimetric survey activities.

Are there any marine parks or sensitive marine ecosystems at the Scarborough field?

The are no expected potential impacts to marine parks or sensitive marine ecosystems due to the nature of proposed activities and the distance from environmentally sensitive areas.

The nearest Australian Marine Parks to the Scarborough location are the Gascoyne Marine Park (Cwth), which is ~77 km to the south, the Ningaloo Marine Park (Cwth), which is ~180 km to the south-south-east, and the Montebello Marine Park (Cwth), which is ~201 km to the East.

What is the total level of Greenhouse Gas (GHG) emissions from proposed activities to be managed under the relevant Environment Plan for subsea installation activities and gravimetric surveys? And how is Woodside managing GHG for proposed activities?

For activities included in this EP, GHG emissions will be generated by installation, survey and crew transfer activities and have been estimated to be 70,000 tCO_2e. This estimate is less than <0.001% of total project lifecycle emissions, as described in the OPP Section 7.1.3.2. These emissions have been estimated based on data gathered from previous activities, standard factors and the most up to date planning available.

Proposed control measures for GHG emissions developed for this EP include but are not limited to:

- Energy efficiency opportunities to be identified, implemented and tracked by contractors
- Reporting of GHG emissions as required by regulatory requirements

Has Woodside considered the broader impacts of total Greenhouse Gas emissions (direct and indirect) from the Scarborough Project?

The extraction of Scarborough gas for onshore processing is not included in the Petroleum Activities Program for this EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this Petroleum Activities Program but will be evaluated in relevant Scarborough EPs as appropriate.

The assessment of the broader Scarborough Project, including the contribution to global GHG emissions and the potential impacts of climate change on sensitive receptors within Australian jurisdictions, is described in Section 7.1.3 of the OPP.

Woodside's climate strategy is to reduce our net equity GHG emissions, while investing in the products and services that our customers need as they reduce their emissions. The Climate Report 2021 summarises Woodside's climate-related plans, activities, progress and climate-related data for the period 1 January 2021 to 31 December 2021.

Has Woodside considered the cumulative impacts of this activity, the Scarborough project and other projects in the area or planned for the area.

The Offshore Project Proposal (OPP) assessed the impacts of the Scarborough Project as a whole. Where there is potential for cumulative impacts, these will be considered and addressed within the relevant Environment Plan.

Unplanned activities

What is the extent of the worst-case oil spill?

For planning purposes Woodside has determined an environment that may be affected (EMBA) for activities to be managed under this EP. The EMBA is the extent and area of the worst-case loss of containment scenario for the activity. The risk assessment concluded that the worst-case scenario for this EP is a ~1000 m^3 marine diesel oil spill, due to vessel collision and associated loss of containment from a fuel tank on a construction vessel. For this EP, a 2000 m^3 marine diesel oil spill has been used for the EMBA, as a conservative approach to understanding potential impacts of a spill.

This EMBA is within the bounds of the EMBA presented in the OPP (Section 5.1; Figure 5-1) as the worst-case loss of containment scenario and is considerably smaller than that in the OPP. Therefore, there are no additional location receptors in the EP as compared to the OPP.

What are the potential environmental impacts from a worst-case marine pollution event for these activities?

Activities to be managed under this EP present no significant changes to any environmental impact or risk profiles to those identified in the OPP, with all risks/impacts remaining below the defined level of significant impact (OPP Table 6-3) and equal to or less than the 'impact significance level' or 'risk consequence' in OPP Tables ES01 and ES02.

What are the potential impacts on EPBC Act listed species from a worst-case marine pollution event for these activities?

There are no new receptors and no new impacts identified for proposed activities proposed to be managed under this EP beyond those identified in preparing the OPP.

Preparation of the EP has not identified any impacts to listed EPBC species greater than a potential slight, short term impact for proposed activities to be managed under this EP.

Aspects of the Scarborough Project that may impact on threatened species are provided in Table 6-2 of the OPP. Potential impacts are detailed in the OPP Section 7.

What arrangements are in place for oil spills?

The best response to a marine pollution event is considered to be prevention. Woodside and its contractors have agreed operating procedures and management plans in the unlikely event of an oil spill, to minimise loss of hydrocarbons to the environment.

In the unlikely event of an oil spill, a NOPSEMA approved Oil Pollution Emergency Plan (OPEP) will be in place for all activities to be managed under this EP.

The OPEP supports timely implementation of pre-determined response strategies through defined organisational structures, human and physical resource requirements, and alignment with applicable government and industry oil spill response plans and requirements.

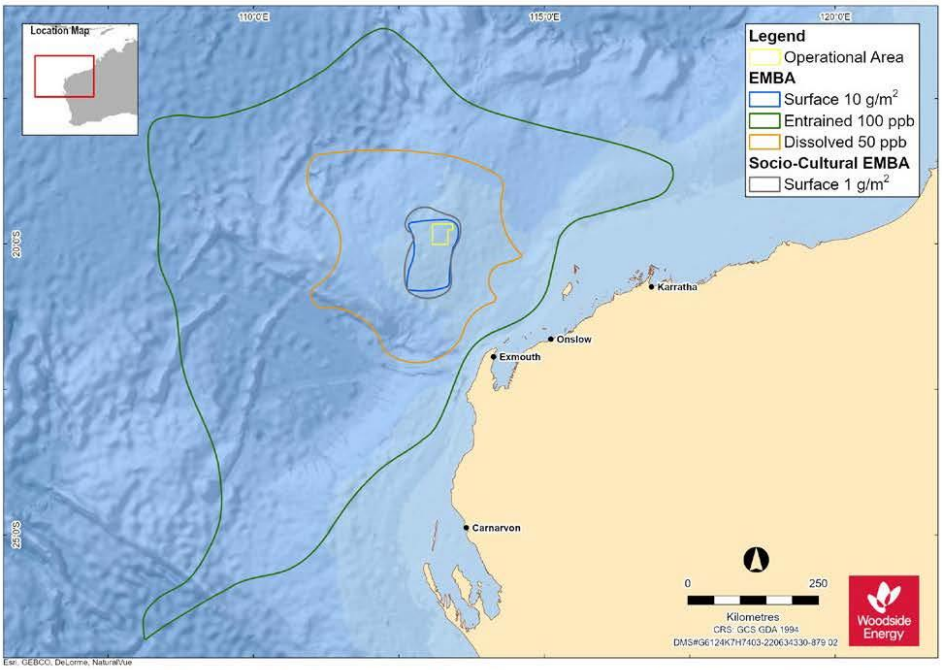


Figure 1: Environment that May Be Affected by the Petroleum Activities Program (based on stochastic modelling which is compiled data from 200 hypothetical spills under different environmental conditions to determine the widest extent of possible oil dispersion)[1]

[1] *The EMBA shown in Figure 1 represents the combined results of multiple separate hypothetical spill events for a worst case marine pollution event and should not be interpreted as reflecting a single marine pollution event.*

1.2 Email sent to Australian Border Force (ABF) (21 September 2022)

Dear Australian Border Force

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU.

	A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.3 Email sent to ABF (21 September 2022)

Dear Australian Border Force

Please be advised that there was an error in the Consultation Information Sheet previously sent, specifically the distances from the Scarborough location to Australian Marine Parks.

This error has been corrected an updated Information Sheet is attached for reference.

Regards,

Woodside Feedback

1.4 Email sent to Australian Fisheries Management Authority (AFMA) (21 September 2022)

Dear AFMA

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

The Western Deepwater Trawl Fishery has been identified as the only fishery relevant to the proposed activities outlined in the EP. A map of the fishery showing the activity location is attached for reference.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.

Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

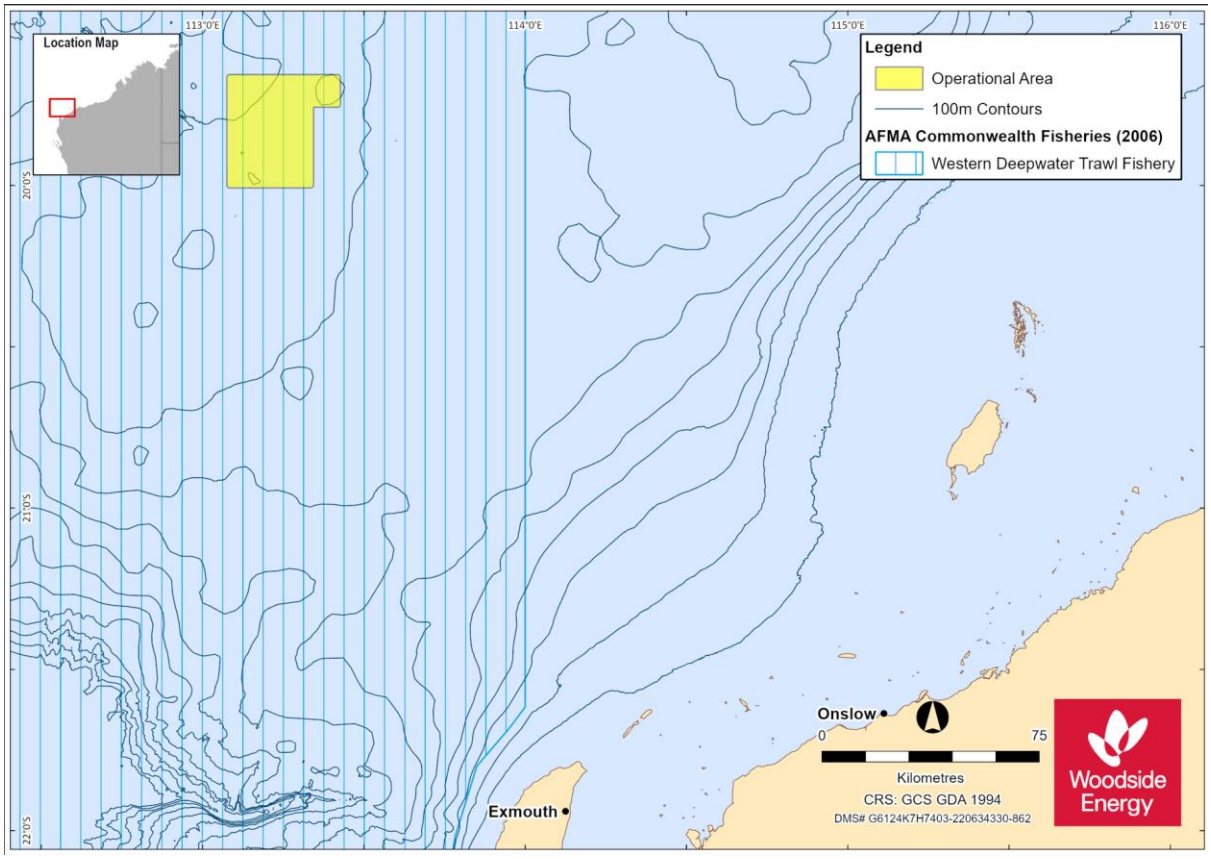
If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,
Woodside Feedback



1.5 Email sent to Australian Hydrographic Service (AHO) and Australian Maritime Safety Authority (AMSA) – Marine Safety (21 September 2022)

Dear AHO and AMSA

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include ual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website and a shipping lanes map is also attached.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
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Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

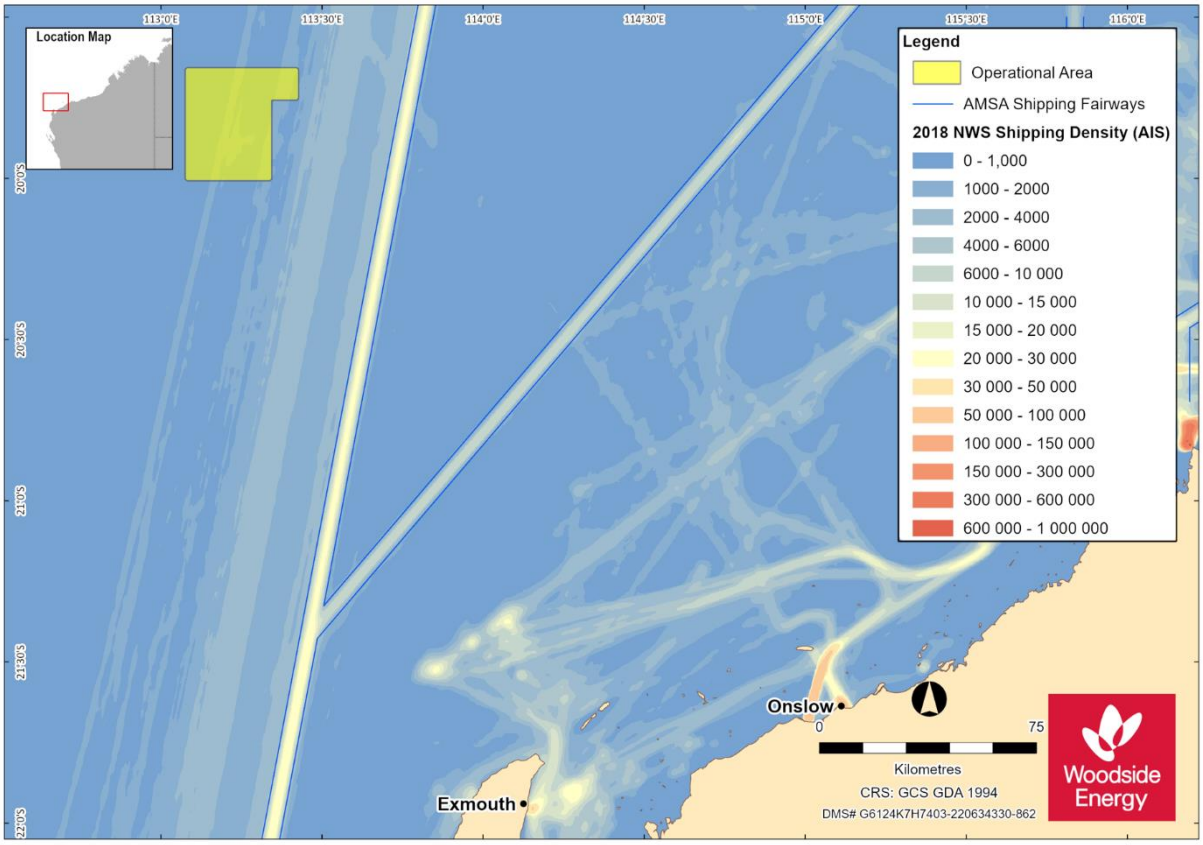
Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,
Woodside Feedback

1.6 Shipping lanes map sent to AHO and AMSA – Marine Safety (21 September 2022)



1.7 Email sent to AMSA – Marine Pollution (21 September 2022)

Dear [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

A copy of the Oil Pollution First Strike Plan will be sent to you for comment and feedback from our oil spill team.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
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Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.8 Email sent to Australian Institute of Marine Science AIMS (21 September 2022)

Dear [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.9 Email sent to Department of Defence DoD (21 September 2022)

Dear Department of Defence

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of:

	• 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

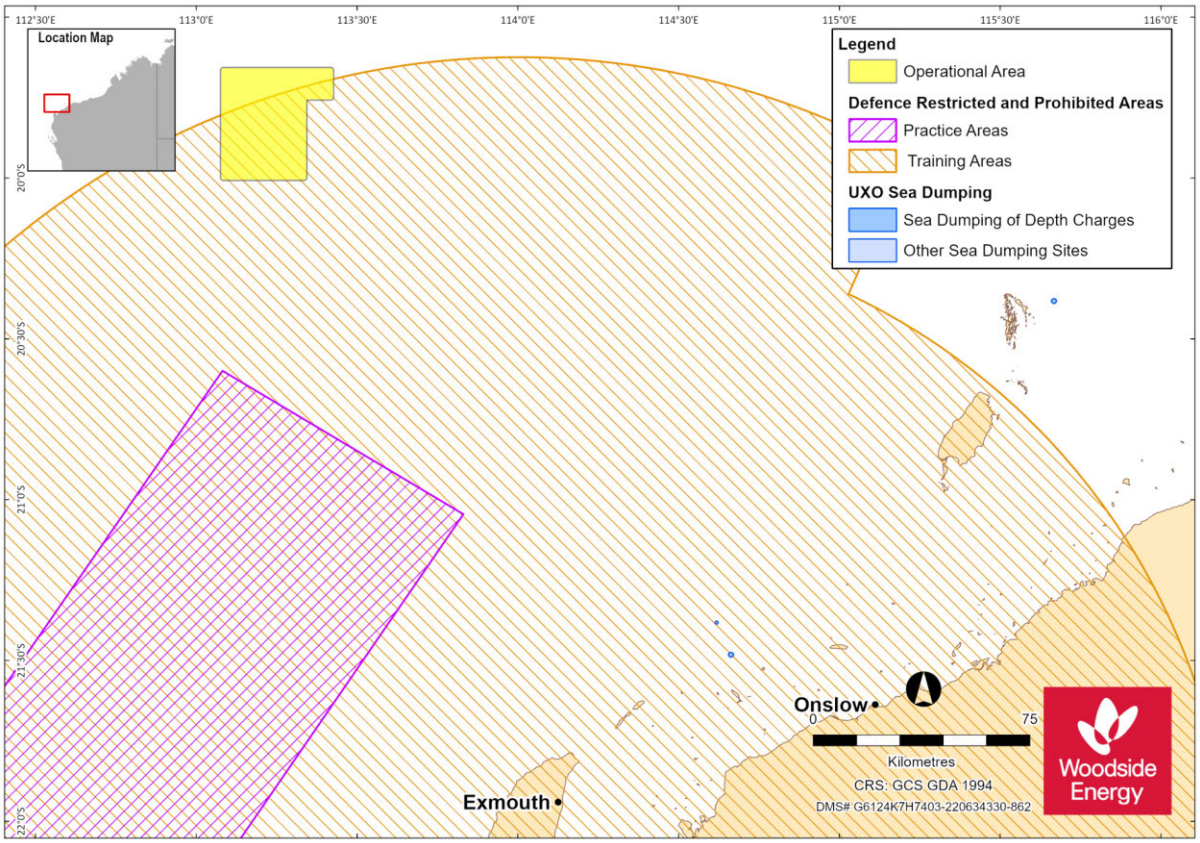
1.10 Email sent to DoD (21 September 2022)

Dear Defence

Apologies for omotting the attached Defence map from our ealier email.

Regards

Woodside Feedback



1.11 Email sent to Department of Industry, Science and Resources (DISR) (formerly DISER) (21 September 2022)

Dear DISER

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.12 Email sent to Director of National Parks (DNP) (21 September 2022)

Dear Director of National Parks

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Feedback:

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.13 Email sent to Department of Department of Climate Change, Energy, the Environment and Water Agriculture (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries (formerly DAWE) (21 September 2022)

Dear DAFF

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

The Western Deepwater Trawl Fishery has been identified as the only fishery relevant to the proposed activities outlined in the EP. A map of the fishery showing the activity location is attached for reference.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

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Please provide your views by **21 October 2021**.

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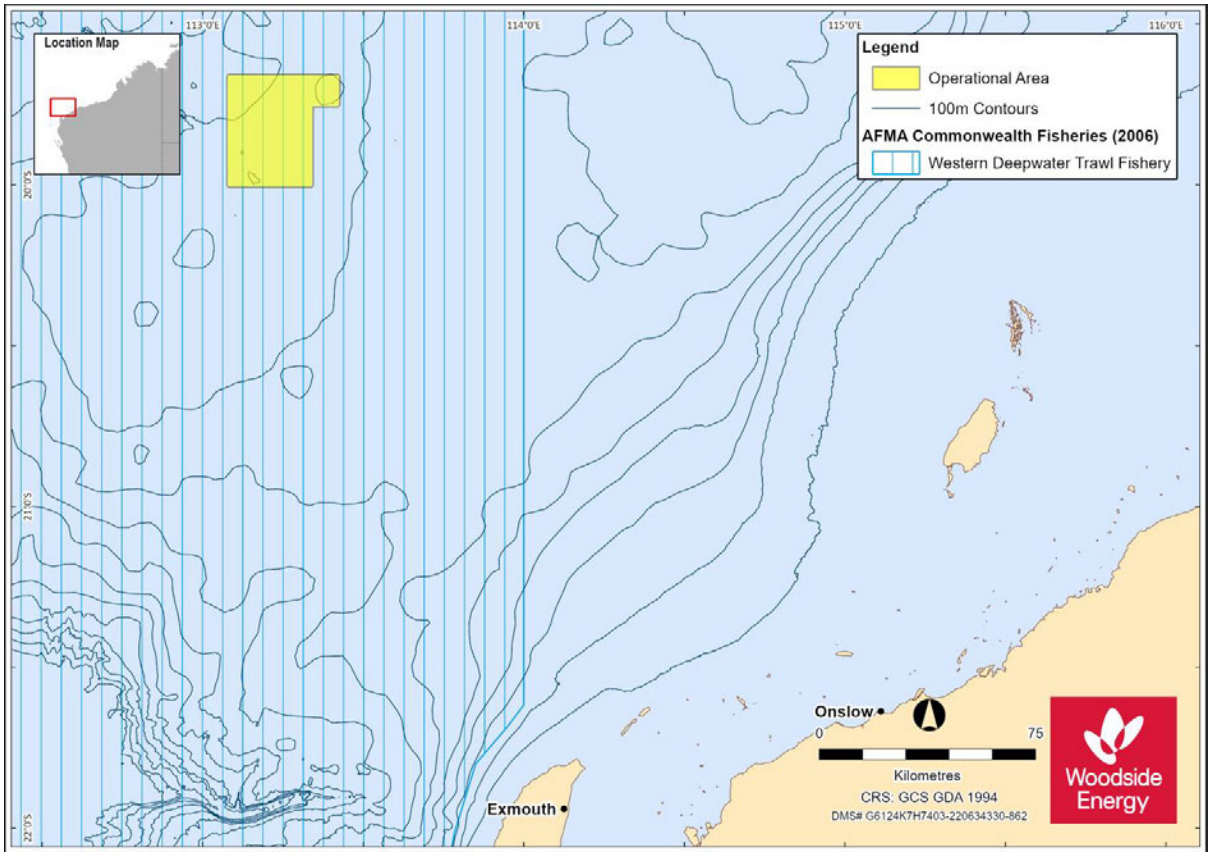
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.14 Fisheries Map sent to DCCEEW/DAFF (21 September 2022)



1.15 Email sent to Department of Primary Industries and Regional Development (DPIRD) (21 September 2022)

Dear [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442

977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.16 Email sent to Department of Mines, Industry Regulation and Safety (DMIRS) (21 September 2022)

Dear DMIRS

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

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Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.

Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.17 Email sent to Department of Transport DoT (21 September 2022)

Dear DoT

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

A copy of the Oil Pollution First Strike Plan will be sent to you for comment and feedback from our oil spill team.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

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Please provide your views by **21 October 2021**.

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Feedback:

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.18 Email sent to Recfishwest (21 September 2022)

Dear [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.19 Email sent to WA Game Fishing Association (WAGFA) (21 September 2022)

Dear WAGFA

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.20 Email sent to Department of Biodiversity, Conservation and Attractions (DBCA) (21 September 2022)

Dear DBCA

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU.

	A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.21 Email sent to Pearl Producers Australia (21 September 2022)

Dear [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

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More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.22 Email sent to Marine Tourism WA − 21 September 2022

Dear Marine Tourism WA

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.23 Email sent to Australian Southern Bluefin Tuna Industry Association (ASBTIA) – 21 September 2022

Dear ASBTIA

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea

infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

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We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

The Western Deepwater Trawl Fishery has been identified as the only fishery relevant to the proposed activities outlined in the EP. A map of the fishery showing the activity location is attached for reference.

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Please provide your views by **21 October 2021**.

Regards,
Woodside Feedback

1.24 Email sent to Commonwealth Fisheries Association (CFA) − 21 September 2022

Dear CFA

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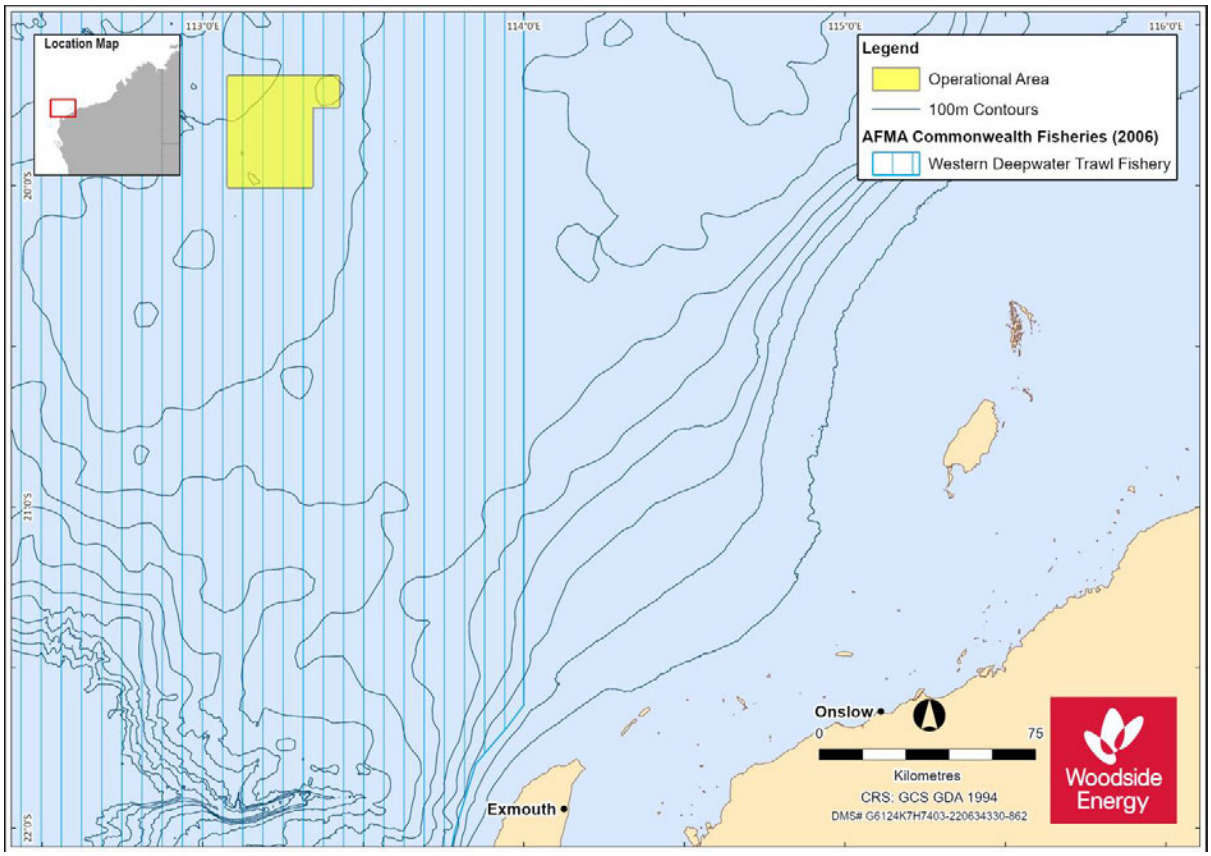
Regards,

Woodside Feedback



1.25 Email sent to Western Australian Fishing Industry Council (WAFIC) − 21 September 2022)

Dear [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Please provide your views by **21 October 2021**.

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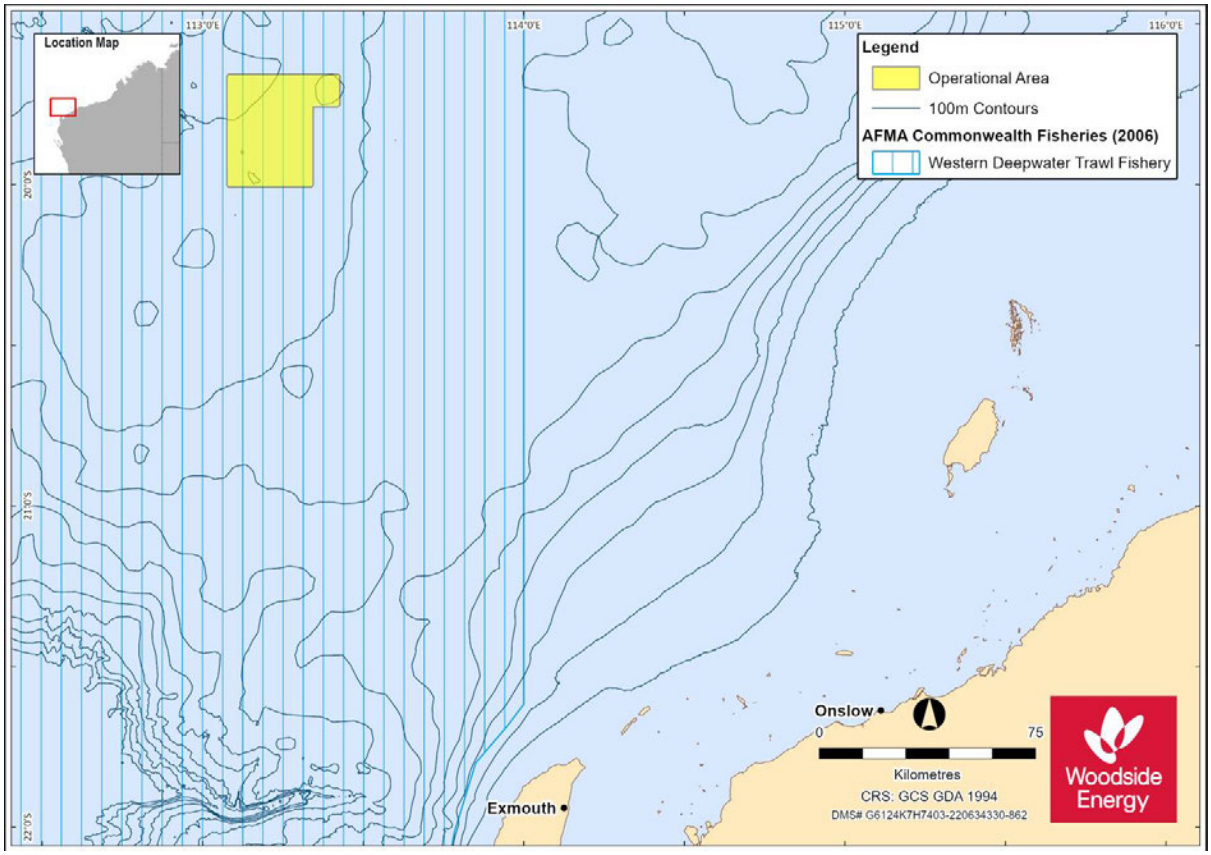
Please provide your views by **21 October 2021**.

Regards,

[redacted]



1.26 Presentation to Karratha Community Liaison Group (CLG) members − 21 September 2022

ENVIRONMENT

Environmental approvals

NWS Project Extension Environmental Review Document

- On June 30, after more than 3 years engagement, the Environmental Protection Authority (EPA) recommended approval of the NWS Project Extension, with rigorous conditions.
- The EPA's appeals period closed 21 July with 759 appeals lodged on themes including scope 3 emissions, rock art and marine discharges.
- The NWS Project has not appealed the proposed conditions. The Office of the Appeals Convenor is assessing the appeals. Finalising the approval will help secure the future of the NWS Project and ongoing benefits for our community.

Scarborough Subsea Infrastructure Installation Environment Plan

- Woodside (as Operator of the Scarborough Project) is planning to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
- Proposed activities are planned to commence in the second half of 2023. Activities will be undertaken in multiple campaigns, with an expected total duration of 18 months.
- Consultation has commenced, Woodside seeking stakeholder feedback by 21 October 2022.

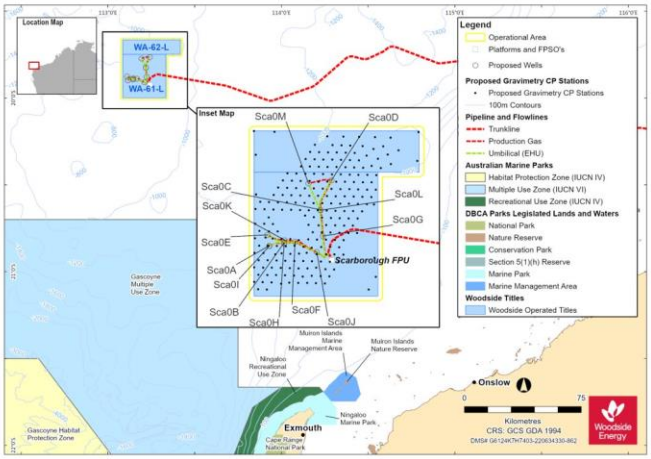
23 | Karratha CLG Q2 Meeting

PART OF A BETTER FUTURE Woodside

ENVIRONMENT

Scarborough Subsea Infrastructure Installation Environment Plan (EP)

- The Scarborough gas resource is located approximately 375 km west-northwest of the Burrup Peninsula and is part of the Greater Scarborough gas fields.
- Woodside is proposing to develop the Scarborough gas resource through a semi-submersible floating production unit (FPU), which will be moored in 950 m of water, connected by an approximately 430 km pipeline to a proposed expansion of the existing Pluto LNG onshore facility.
- Proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU.



PART OF A BETTER FUTURE Woodside

CONFIDENTIAL

1.27 Email sent to Karratha CLG members − 21 September 2022

Dear Karratha CLG members

Thank you to those who joined us today for our Q3 CLG meeting. We will share the meeting minutes and the presentation pack shortly.

As detailed in the meeting, Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards, [redacted]

1.28 Email sent to International Fund for Animal Welfare (IFAW) – 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Regards,

Woodside Feedback

1.29 Email sent to Australian Conservation Foundation (ACF) − 21 September 2022

Dear Stakeholder

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.30 Email sent to Tuna Australia − 21 September 2022

Dear [redacted] and [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

The Western Deepwater Trawl Fishery has been identified as the only fishery relevant to the proposed activities outlined in the EP. A map of the fishery showing the activity location is attached for reference.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four

Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.31 Email sent to Australian Petroleum Production and Exploration Association (APPEA) − 21 September 2021

Dear APPEA

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

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Please provide your views by **21 October 2021**.

Activity:

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Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
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Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.

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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.32 Email sent to Australian Marine Conservation Society (AMCS) − 21 September 2021

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

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Activity:

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	Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.33 Email sent to Conservation Council of Western Australia (CCWA) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.34 Email sent to Australasian Centre for Corporate Responsibility (ACCR) – 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.35 Email sent to The Wilderness Society (TWS) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

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Activity:

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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.36 Email sent to Say No To Scarborough Gas (SNTSG) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.37 Email sent to Extinction Rebellion WA (XRWA) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.38 Email sent to Sea Shepherd Australia (SSA) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.39 Email sent to Market Forces − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.40 Email sent to Climate Council − 21 September 2022

Dear Stakeholder

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Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure.

	• 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.41 Email sent to Greenpeace Australia Pacific (GAP) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

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977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.42 Email sent to Lock the Gate − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

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The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.

Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
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Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
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Feedback:

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.43 Email sent to 350 Australia (350A) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

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The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

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Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
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Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
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	A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.44 Email sent to Doctors for the Environment Australia (DEA) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
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Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
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Feedback:

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Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental

Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.45 Email sent to Friends of Australian Rock Art (FARA) − 21 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.

Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.46 Email sent to Rechfishwest − 21 September 2022

Dear [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
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	Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.47 Email sent Western Gas and Chevron − 21 September 2022

Dear neighbouring titleholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

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The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
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Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

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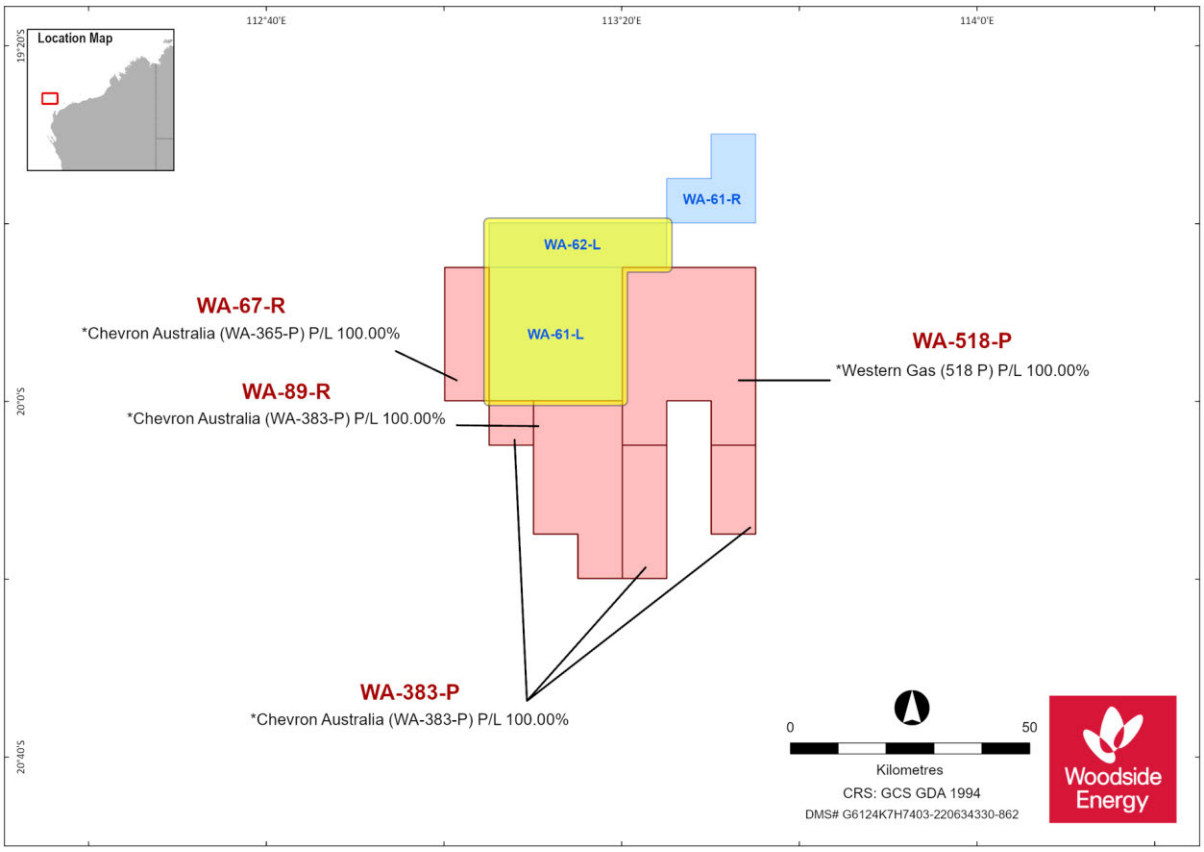
Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback



1.48 Email sent to Western Deepwater Trawl Fishery Licence Holders (5 Licence Holders) − 21 September 2022

Dear licence holders

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

The Western Deepwater Trawl Fishery has been identified as the only fishery relevant to the proposed activities outlined in the EP. A map of the fishery showing the activity location is attached for reference.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

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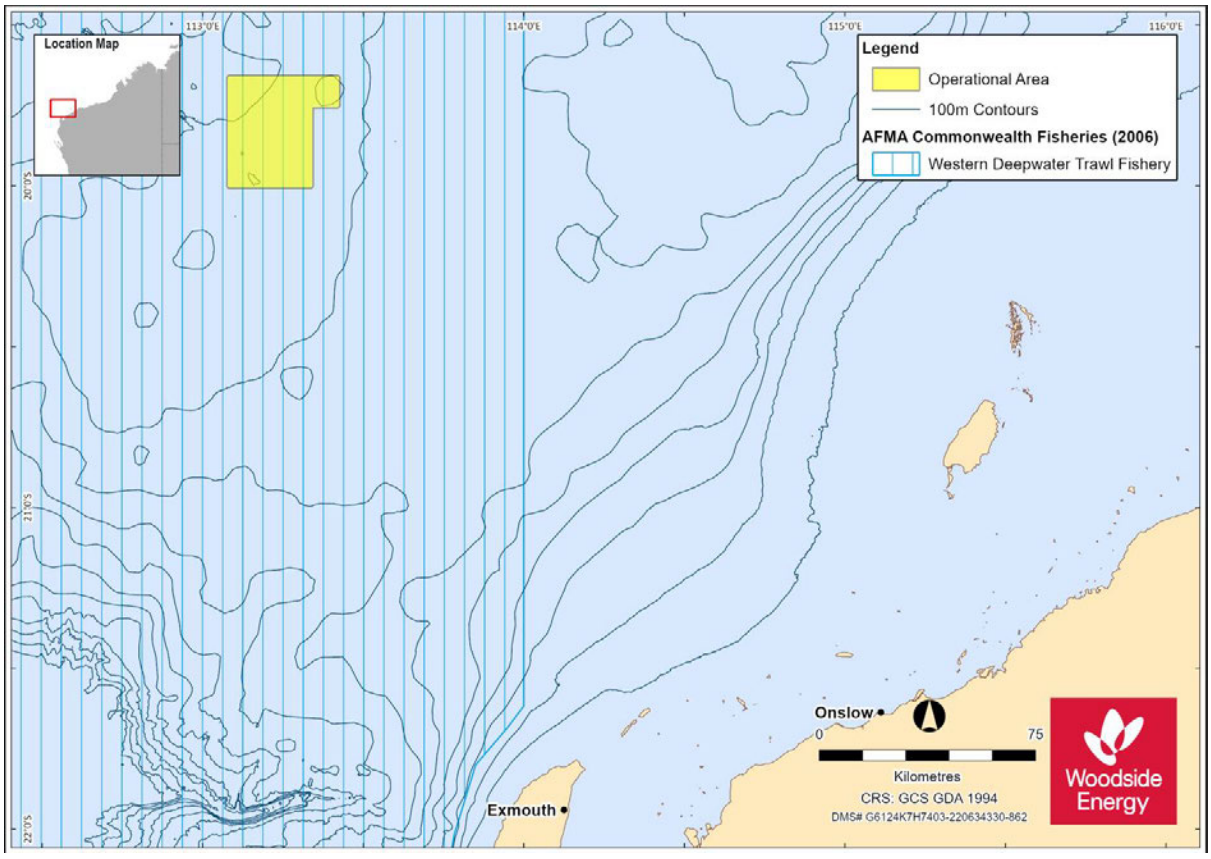
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,



Woodside Feedback

1.49 Email sent to World Wildlife Fund (WWF) Australia − 21 September 2022

Dear Stakeholder

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The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

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Feedback:

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Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.50 Email to Murujuga Aboriginal Corporation (MAC) − 12 October 2022

Hi [redacted] and team,

[redacted], I understand [redacted] is currently on leave, but if you could please remind him of the below upon [redacted] return it'd be greatly appreciated. If MAC has any comments or queries please do not hesitate to reach out to Feedback@woodside.com.au or 1800 442 977 by 21 October 2022.

Best regards,

[redacted]
Principal Heritage Adviser | Indigenous Affairs

1.51 Email to Murujuga Aboriginal Corporation − 23 September 2022

Dear [redacted],

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea

infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

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Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements.

	Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.52 Email to Ngarluma Yindjibarndi Foundation Ltd (NYFL) − 23 September 2022

Dear [redacted],

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four

Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.53 Email to Ngarluma Aboriginal Corporation − 23 September 2022

Dear [redacted],

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.

Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.54 Email to [redacted], [redacted] and Save our Songlines − 23 September 2022

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough Floating Processing Unit. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

The Western Deepwater Trawl Fishery has been identified as the only fishery relevant to the proposed activities outlined in the EP. A map of the fishery showing the activity location is attached for reference.
The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.

Exclusionary/Cautionary Zone:	The Operational Area for gravimetry activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.55 Email to Wirrawandi Aboriginal Corporation − 23 September 2022

Dear [redacted],

Woodside is planning to submit an Environment Plan (EP) for Scarborough subsea infrastructure installation and survey activities located in Permit Areas WA-61-L and WA-62-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The proposed EP activities will include visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU. Proposed activities are planned to commence in the second half of 2023 and be undertaken in multiple campaigns, with an expected total duration of 18 months.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.

An FAQ fact sheet is also attached, which provides additional information on proposed activities relevant to stakeholder feedback we have received for previous consultation activities.

The WA-61-L and WA-62-L Subsea Infrastructure Installation EP falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. This EP is the third of four Commonwealth EPs proposed for the Scarborough development.

More information on the Scarborough development can be found here .

Please provide your views by **21 October 2021**.

Activity:

Summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Approx. Water Depth (m):	~ 900 m – 1000 m.
Schedule:	H2 2023 pending approvals, vessel availability and weather constraints.
Duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	The Operational Area for activities includes a radius of: • 1000 m around location of the outermost concrete pads. • 1500 m around location of subsea infrastructure. • 2000 m around future location of FPU. A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels.

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:

Feedback@woodside.com.au or 1800 442 977

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the EP in order for this information to remain confidential to NOPSEMA.

Please provide your views by **21 October 2021**.

Regards,

Woodside Feedback

1.56 Email to DoT − 28 September 2022

Hi [redacted],

As part of Woodside's ongoing consultation for its current and planned activities, I would like to advise WA Department of Transport (DoT) that Woodside is preparing the WA-61-L & WA-62-L Subsea Infrastructure Installation Environment Plan (EP). Woodside (as Operator of the Scarborough Project) is planning to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, about 374 km west-northwest of Dampier, Western Australia.

Woodside would like to offer DoT the opportunity to review or provide comment on the activity.

Information is presented as follows:

- A Consultation Information Sheet is available on our website here, providing information on the proposed activities. An additional information sheet covering frequently asked questions is available here.
- The *WA-61-L & WA-62-L Subsea Infrastructure Installation Oil Pollution First Strike Plan* is attached. This will form part of the approval submission in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).
- In the table below, as requested in the *Offshore Petroleum Industry Guidance Note* (July 2020) and from recent engagement activities between DoT and Woodside, responses to the information requirements in a succinct summary and source of information.

Woodside anticipates submitting the proposed EP in November 2022 to support these activities.

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977 by **COB 04 November 2022**.

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

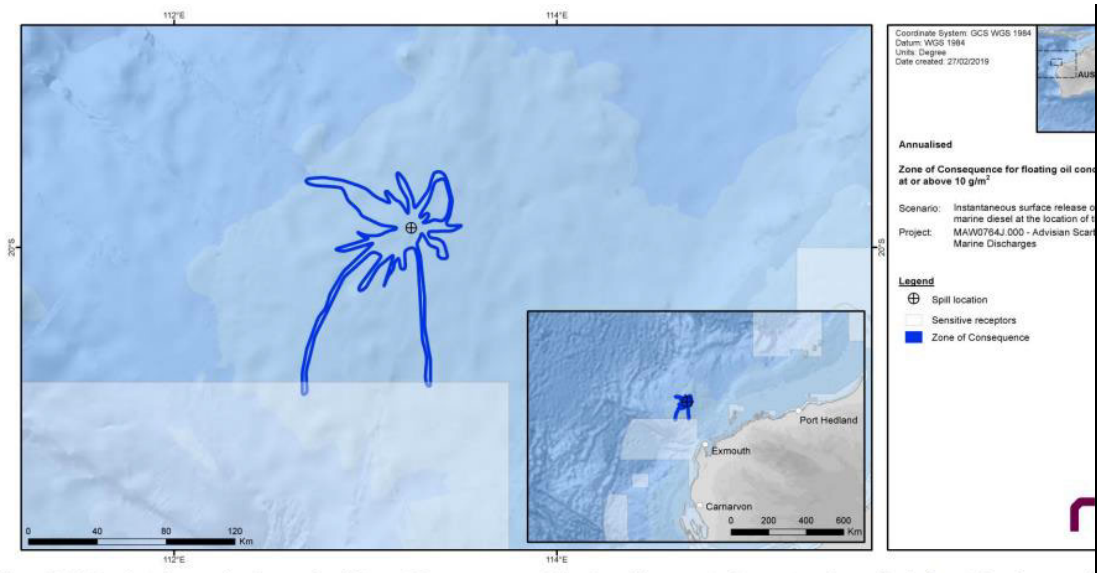
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Many thanks,

[redacted]

Information Requested in the Offshore Petroleum Industry Guidance Note (July 2020)	Information Provided & Reference
Description of activity, including the intended schedule, location (including coordinates), distance to nearest landfall and map.	Included in the consultation information sheet
Worst case spill volumes.	Included in Appendix A of the First Strike Plan
Known or indicative oil type/properties.	Included in Appendix A of the First Strike Plan
Amenability of oil to dispersants and window of opportunity for dispersant efficacy.	Dispersant is not deemed to be suitable for a marine diesel oil (MDO) spill.
Description of existing environment	Included in Section 3 of the First Strike Plan

and protection priorities.	
Details of the environmental risk assessment related to marine oil pollution - describe the process and key outcomes around risk identification, risk analysis, risk evaluation and risk treatment. For further information see the Oil Pollution Risk Management Information Paper (NOPSEMA 2021).	Unplanned loss of containment events from the Petroleum Activities Program have been identified during the risk assessment process (presented in Section 6 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 6 of the EP. One unplanned event or credible spill scenario for the Petroleum Activities Program has been selected as representative across types, sources and incident/response levels, up to and including the WCCS. Table 2-1 of the OSPRMA and Appendix A of the First Strike Plan present the credible scenario for the Petroleum Activities Program. One worst-case credible scenarios (CS-01) has been used for response planning purposes for the activity as all other scenarios are of a lesser scale and extent. By demonstrating capability to meet and manage an event of this size and timescale, Woodside assumes relevant scenarios that are smaller in nature and scale can also be managed by the same capability. Response performance outcomes have been defined based on a response to the WCCS.
Outcomes of oil spill trajectory modelling, including predicted times to enter State waters and contact shorelines.	**Credible Scenario-01 (CS-01) – Surface release of Marine Diesel Oil after a vessel fuel tank rupture at the floating production unit (FPU) location** Instantaneous release of 2000 m^3. 5% residue of 100 m^3 Minimum time to shoreline contact (above 100 g/m^2) in days *No contact at response thresholds* Stochastic modelling for the above scenario was undertaken by RPS in April 2019 and reprocessed in May 2021. The below figure shows the EMBA of floating oil concentrations at or above 10 g/m^{2*}

	 **Figure 3.56 Predicted annualised smoothed Zone of Consequence of floating oil concentrations at or above 10 g/m² resulting from an in surface release of marine diesel after a vessel collision at the FPU location.** ** Please note that new EMBA figures were not included with the reprocessed data thus there is no 1 g/m² floating EMBA map available and hence inclusion of the 10 g/m² EMBA above. Floating contact at 1 g/m² is only predicted offshore at Gascoyne Marine Park, and does not enter State waters.*
Details on initial response actions and key activation timeframes.	Included in Section 2 of the First Strike Plan
Potential Incident Control Centre arrangements.	Included in Appendix D and E of the First Strike Plan
Potential staging areas / Forward Operating Base.	A Forward Operating Base can be established at Exmouth and/ or Dampier.
Details on response strategies.	Included in Section of the First Strike Plan
Use of DoT equipment resources	Woodside has access to its own and contracted stockpiles of response equipment and acknowledges that potential use of DoT resources cannot be assumed and is at the discretion of DoT.
Details and diagrams on proposed IMT structure including integration of DoT	Included in Appendix D and E of the First Strike Plan

arrangements as per this IGN.	
Details on testing of arrangements of OPEP/OSCP.	· Level 1 Response – one Level 1 First Strike drill must be conducted during the activity. For campaigns with an operational duration of greater than one month this will occur within the first two weeks of commencing the activity and then at least every 6 month hire period thereafter. · Level 2 Response – Level 2 Emergency Management exercises are relevant to activities with an operational duration of one month or greater. At least one Emergency Management exercise per vessel per campaign must be conducted within the first month of commencing the activity and then at every 6 month hire period thereafter, where applicable based on duration. · Level 3 Response – the number of CMT exercises conducted each year is determined by the Chief Executive Officer, in consultation with the Vice President of Security and Emergency Management. **Testing of Oil Spill Response Arrangements** Woodside's arrangements for spill response are common across its Australian operating assets and activities to ensure the controls are consistent. The overall objective of testing these arrangements is to ensure that Woodside maintains an ability to respond to a hydrocarbon spill, specifically to: · Ensure relevant responders, contractors and key personnel understand and practise their assigned roles and responsibilities. · Test response arrangements and actions to validate response plans. · Ensure lessons learned are incorporated into Woodside's processes and procedures and improvements are made where required. Woodside's Testing of Arrangements Schedule aligns with international good practice for spill preparedness and response management; the testing is compatible with the IPIECA Good Practice Guide and the Australian Institute for Disaster Resilience (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. The hydrocarbon spill arrangements included within the schedule are tested against Woodside's regulatory commitments. Each arrangement has a support agency/company and an area to be tested (e.g. capability, equipment and personnel). For example, an arrangement could be to test Woodside's personnel capability for conducting scientific monitoring, or the ability of the Australian Marine Oil Spill Centre to provide response personnel and equipment. 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 within the schedule, up to eight formal exercises are planned annually, across Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment. 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).

Additional comments	Please note some of the links in the document are still being finalised, and as such may show a reference error in the attached version.

[redacted]
Hydrocarbon Spill Adviser | Corporate HSE

1.57 Email to AMSA – Marine Pollution − 28 September 2022

Hi [redacted],

As part of Woodside's ongoing consultation for its current and planned activities, I would like to advise the Australian Maritime Safety Authority (AMSA) that Woodside is preparing the WA-61-L & WA-62-L Subsea Infrastructure Installation Environment Plan (EP). Woodside (as Operator of the Scarborough Project) is planning to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, about 374 km west-northwest of Dampier, Western Australia.

Woodside would like to offer AMSA the opportunity to review or provide comment on the activity.

Information is presented as follows:

- A Consultation Information Sheet is available on our website here, providing information on the proposed activities. An additional information sheet covering frequently asked questions is available here.
- The *WA-61-L & WA-62-L Subsea Infrastructure Installation Oil Pollution First Strike Plan* is attached. This will form part of the approval submission in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Woodside anticipates submitting the proposed EP in November 2022 to support these activities.

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977 by **COB 04 November 2022**.

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Many thanks,

[redacted]

[redacted]
Hydrocarbon Spill Adviser | Corporate HSE

1.60 Email to Ngarluma Aboriginal Corporation (NAC) − 12 October 2022

Hi [redacted],

Just a quick email to ensure this has not fallen off your radar. If NAC has any comments or queries please do not hesitate to reach out to Feedback@woodside.com.au or 1800 442 977 by 21 October 2022.

Best regards,

[redacted]
Principal Heritage Adviser | Indigenous Affairs

1.61 Email sent to Karratha CLG members − 12 October 2022

Dear CLG members

As per our email below, we are consulting on the Scarborough subsea infrastructure environment plan.

Please get in touch if you would like to discuss this activity with a member of the project team. We ask that any feedback is provided by 21 October please.

Regards, [redacted]

[redacted]
Senior Corporate Affairs Adviser | North West

1.62 Email to Wirrawandi Aboriginal Corporation (WAC) − 12 October 2022

Hi [redacted],

Just a quick email to ensure this has not fallen off your radar. If WAC has any comments or queries please do not hesitate to reach out to Feedback@woodside.com.au or 1800 442 977 by 21 October 2022.

Best regards,

[redacted]
Principal Heritage Adviser | Indigenous Affairs

1.63 Email sent to Say No to Scarborough Gas (SNTSG) − 12 October 2022

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

Say No to Scarborough Gas has confirmed its availability to meet with Woodside on Thursday, 13 October 2022. To make the most of the meeting, we encourage Say No to Scarborough Gas to discuss issues it has in relation to the WA-61-L and WA-62-L Scarborough Subsea Infrastructure installation EP with regard to Say No to Scarborough Gas' functions, interests and activities.

Please note that the feedback period for the WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation EP closes on **21 October 2022**.

Woodside Feedback

1.66 Email sent to AMSA − 13 October 2022

Dear AMSA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.67 Email sent to ABF − 13 October 2022

Dear Australian Border Force

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.68 Email sent to AFMA − 13 October 2022

Dear AFMA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.69 Email sent to Western Deepwater Trawl Fishery licence holders − 13 October 2022

Dear licence holders

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.70 Email sent to Neighbouring Titleholders − 13 October 2022

Dear neighbouring titleholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

1.71 Email sent to DCCEEW/DAFF − 13 October 2022

Dear DAFF

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.72 Email sent to DISR (formerly DISER) (13 October 2022)

Dear DISER

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.73 Email sent to DNP (13 October 2022)

Dear Director of National Parks

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.74 Email sent to DMIRS (13 October 2022)

Dear DMIRS

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.75 Email sent to DPIRD (13 October 2022)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.76 Email sent to AIMS (13 October 2022)

Dear ■

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.77 Email sent to APPEA (13 October 2022)

Dear APPEA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.78 Email sent to ASBTIA (13 October 2022)

Dear ASBTIA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.79 Email sent to CFA (13 October 2022)

Dear CFA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.80 Email sent to Pearl Producers Australia (13 October 2022)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.81 Email sent to Rechfishwest (13 October 2022)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.82 Email sent to Marine Tourism WA (13 October 2022)

Dear Marine Tourism WA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.83 Email sent to WAFIC (13 October 2022)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.84 Email sent to DEA (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.85 Email sent to FARA (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.86 Email sent to Lock the Gate (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.87 Email sent to IFAW (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.88 Email sent to TWS (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.89 Email sent to WWF (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.90 Email sent to 350A (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.91 Email sent to GAP (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.92 Email sent to AMCS (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.93 Email sent to XRWA (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.94 Email sent to SSA (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.95 Email sent to Climate Council (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.96 Email sent to ACCR (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

1.97 Email sent to Market Forces (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

1.98 Email sent to CCWA (13 October 2022)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.100 Email sent to [redacted], [redacted] and Save Our Songlines (13 October 2022)

Dear stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.101 Email sent to the University of Western Australia (UWA) (11 November 2022)

Dear [redacted]

Please be advised that Woodside has submitted the following environment plans to undertake seabed intervention and trunkline installation activities for the proposed Scarborough Project:

- Seabed intervention and trunkline installation within Commonwealth waters which will be managed under the Scarborough Seabed Installation Intervention and Trunkline Installation Environment Plan (SITI EP) and which has been submitted to NOPSEMA as the Commonwealth regulator for assessment.
- Trunkline installation within State waters which will be managed under the Scarborough Trunkline Installation (State Waters) Environment Plan (State EP) and which has been submitted to DMIRS as the State regulator for assessment.

A Consultation Information Sheet for each of the activities is linked above, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. They are also available on our website.

Woodside is seeking your advice regarding any research activities that UWA may be undertaking that may overlap with our proposed activities.

We would be grateful for your advice and any other feedback UWA may have on the proposed activities by **25 November 2022**.

More information on the Scarborough Project can be found here.

Your feedback and our response will be included in our Environment Plan which will be submitted to NOPSEMA or DMIRS for acceptance in accorvembdance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for these activities is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Regards,

Woodside Feedback

1.102 Email sent to National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP) (11 November 2022)

Dear [redacted],

Further to the below correspondence regarding Woodside's Scarborough 4D B1 Marine Seismic Survey, please be advised that Woodside has submitted an Environment Plan (EP) to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for the following proposed activities:

- Scarborough Seabed Intervention and Trunkline Installation Environment Plan (SITI EP)
- WA-61-L Scarborough Drilling and Completions (D&C EP)

Woodside has previously submitted Revision 1 of the SITI EP to NOPSEMA. This revision of the EP has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside has also previously submitted Revision 0 of the D&C EP to NOPSEMA. This revision of the EP has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Woodside is preparing

an updated revision of the SITI EP and D&C EP for submission to NOPSEMA. We confirm the activities, location and duration described in these revisions remain the same, with no material changes.

Woodside is also proposing to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, about 374 km west-northwest of Dampier, Western Australia under the WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan (Subsea EP). This EP has not yet been submitted to NOPSEMA.

A Consultation Information Sheet for each of the activities is linked above, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. They are also available on our website.

The proposed activities under the SITI EP, D&C EP and Subsea EP are planned to be undertaken within a subset of the activity area for the Scarborough Seismic Survey and may be of interest to you.

Each of these EPs fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. The OPP includes a detailed description of activities and an assessment of impacts; with controls to develop acceptability criteria. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

Should NERA CESP have feedback on the SITI EP, D&C EP or Subsea EP, please provide your views by **25 November 2022.**

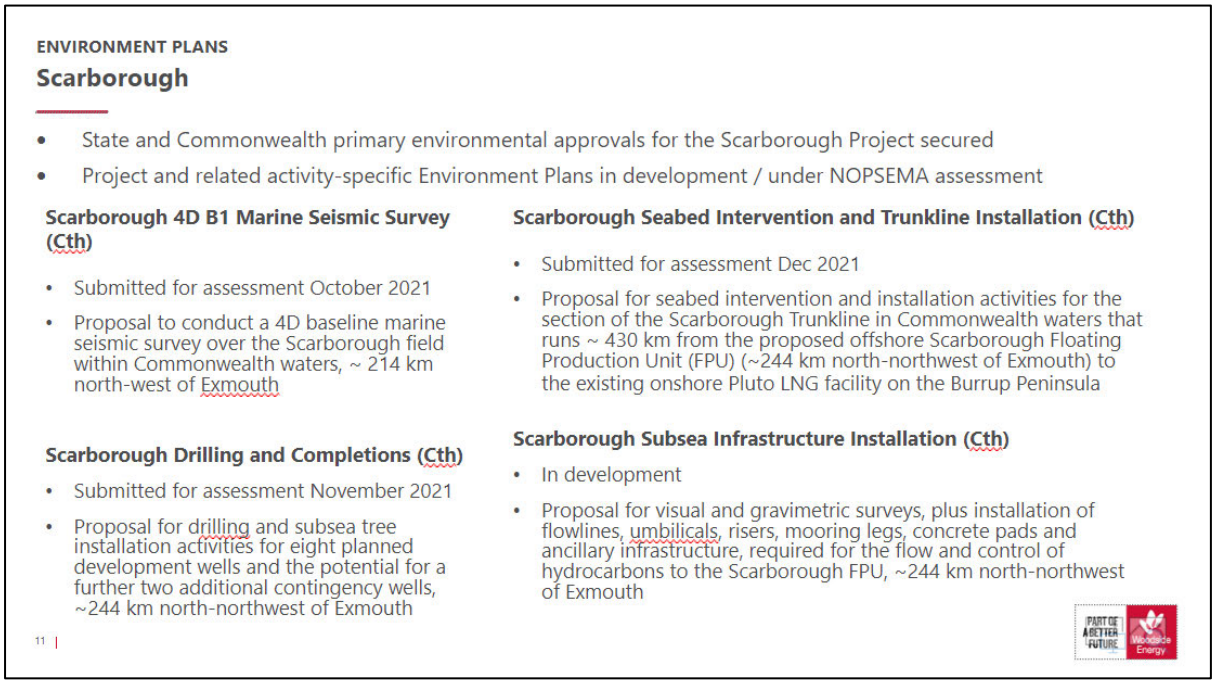
Your feedback and our response will be included in our Environment Plan which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Regards,

Woodside Feedback

1.103 Presentation to Exmouth Community Reference Group (CRG) (17 November 2022)



ENVIRONMENT PLANS

Scarborough

- State and Commonwealth primary environmental approvals for the Scarborough Project secured
- Project and related activity-specific Environment Plans in development / under NOPSEMA assessment

Scarborough 4D B1 Marine Seismic Survey (Cth)

- Submitted for assessment October 2021
- Proposal to conduct a 4D baseline marine seismic survey over the Scarborough field within Commonwealth waters, ~ 214 km north-west of Exmouth

Scarborough Drilling and Completions (Cth)

- Submitted for assessment November 2021
- Proposal for drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells, ~244 km north-northwest of Exmouth

Scarborough Seabed Intervention and Trunkline Installation (Cth)

- Submitted for assessment Dec 2021
- Proposal for seabed intervention and installation activities for the section of the Scarborough Trunkline in Commonwealth waters that runs ~ 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) (~244 km north-northwest of Exmouth) to the existing onshore Pluto LNG facility on the Burrup Peninsula

Scarborough Subsea Infrastructure Installation (Cth)

- In development
- Proposal for visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU, ~244 km north-northwest of Exmouth

11 |

1.104 Email sent to [redacted], [redacted] and Save Our Songlines – (2 December 2022)

Dear [redacted] and [redacted]

Thank you for your correspondence dated 24 November 2022 titled *Scarborough Gas Project Environment Plans – Meeting request*.

Woodside reiterates that it is open to continue consulting with you, receiving feedback and discussing your concerns in relation to Woodside's Scarborough Environment Plans (EPs) – the Scarborough 4D Baseline Marine Seismic Survey (Seismic) EP, the WA-61-L Scarborough Drilling and Completions (D&C) EP, the Scarborough Seabed Intervention and Trunkline Installation (SITI) EP, the Trunkline Installation (State Waters) EP and the WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan (Subsea) EP (collectively referred to as the **Scarborough EPs**).

For your assurance, consultation is ongoing and feedback will continue to be accepted throughout the life of the EP, including while it is being prepared, while it is under assessment as well as after acceptance, while the EP remains in force.

Woodside acknowledges your previous correspondence and confirms our previous arrangements to meet and consult that have been ongoing since November 2021. We remain open to continue consulting with you in relation to the Scarborough EPs.

We note your request to reschedule a meeting. We are available to meet with you on any date in December 2022 in Karratha. Can you please confirm if you are available to meet by 9 December 2022. Alternatively, if you would like to propose a different date, please also let us know by 9 December.

To assist you to prepare for the meeting, please see links to relevant Woodside information for the Scarborough EPs below.

- The Seismic EP Consultation Information Sheet, which has been available on Woodside's website since May 2021, invited comments on the proposed activities to be provided before 14 June 2021. Revision 0 of the EP have been available on the NOPSEMA website since 18 October 2021 and was open for public comment until 17 November 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).
- The D&C EP Consultation Information Sheet, which has been available on Woodside's website since July 2021, invited comments on the proposed activities to be provided before 2 August 2021. Revision 0 of the EP have been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public).
- The SITI EP Consultation Information Sheet, which has been available on Woodside's website since August 2021, invited feedback on the proposed activities to be provided before 30 September 2021. Revision 1 of the EP has been available on the NOPSEMA website since 13 January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public).
- The State Waters EP Consultation Information Sheet, which has been available on Woodside's website since March 2022, invited comments on the proposed activities to be provided before 9 April 2022. The EP summary has been available on the DMIRS website since June 2022 and was updated in September 2022 (https://ace.dmp.wa.gov.au/ACE/Public/PetroleumProposals/ViewPlanSummary?registrationId=112024).
- The Subsea EP Consultation Information Sheet, which has been available on Woodside's website since September 2022, invited comments on the proposed activities to be provided before 21 October 2022. This EP is in development, and we are seeking your feedback to assist in its preparation.

There has been ample time and information available to inform feedback on our proposed Scarborough EPs. Therefore, can you please provide feedback no later than at the proposed meeting in December 2022.

We note your letter dated 24 November 2022 makes reference to arrangements which would enable you to share relevant information such as matters that are restricted to women or men only. Please confirm what arrangements are required to enable you to share this information by 9 December 2022.

Please also note that your previous correspondence has not been received by all intended recipients. To avoid future correspondence being missed, please send future communications to the Woodside Feedback inbox – feedback@woodside.com.au – which will ensure its timely receipt.

We look forward to hearing from you.

Kind regards,

Woodside Feedback

1.105 Email sent to [redacted], [redacted] and Save Our Songlines – (4 January 2023)

Dear [redacted] and [redacted]

Woodside refers to our email dated 2 December 2022 (below) seeking confirmation of your availability to meet in December to continue consultation with you. We note that we have not received a response from you in relation to that correspondence.

We remain open to meeting with you to discuss ongoing feedback in relation to Woodside's Scarborough Environment Plans (EPs) – the Scarborough 4D Baseline Marine Seismic Survey (Seismic) EP, the WA-61-L Scarborough Drilling and Completions (D&C) EP, the Scarborough Seabed Intervention and Trunkline Installation (SITI) EP, the Trunkline Installation - State Waters (State) EP and the WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan (Subsea) EP (collectively referred to as the Scarborough EPs). Woodside is still awaiting confirmation of your availability to meet.

Woodside reiterates that we are open to continue consultation with you. Can you please confirm when in January 2023 you are available to meet?

Kind regards,

Woodside Feedback

1.106 Woodside Consultation Information Sheet – (updated January 2023)

Woodside Energy

STAKEHOLDER CONSULTATION

INFORMATION SHEET

January 2023

WA-61-L AND WA-62-L SUBSEA INFRASTRUCTURE INSTALLATION ENVIRONMENT PLAN

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Proposed activity

Woodside is planning to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

Proposed activities will include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers, which will be required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed in preparation for the arrival of the FPU.

A gravimentry survey is also planned to be undertaken in Permit Areas WA-61-L and WA-62-L to support Woodside's knowledge of the Scarborough reservoir.

Project vessels

Proposed survey and installation activities will be performed by up to four dedicated and specialised dynamically positioned activity and support vessels. Details on vessels are included in **Table 1**.

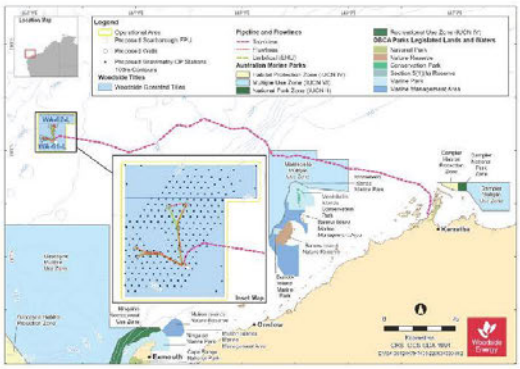


Figure 1. Petroleum Activity Program Operational Area. Details on the location of the proposed infrastructure are included in Table 2.

Communication with mariners

The Operational Area for activities includes a radius of:

- 1,000 m around location of the outermost concrete pads.
- 1,500 m around location of subsea infrastructure.
- 2,000 m around future location of FPU.

A temporary 500 m exclusion zone will be in place around vessels to manage vessel movements. Other marine users are permitted to use but should take care when entering the Operational Area and remain clear of the exclusion zone.

Assessment

Woodside has undertaken an assessment of the potential risks to the marine environment as well as the potential impacts to relevant persons arising from the planned activities. This assessment considers timing, duration and location of the planned activities.

A number of mitigation and management measures will be implemented and are summarised in **Table 3**. Further details will be provided in the EP, which is being developed to manage proposed activities.

In preparing the EP, our intent is to minimise environmental and social impacts associated with the proposed activities, and we are seeking any interest or comments you may have to inform our decision making.

Table 1 – Activity summary

WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan	
Permit Area	WA-61-L and WA-62-L
Approximate water depth	~ 900 - 1000 m

Commencement date	• Activities are planned to commence in H2 2023, with activities estimated to be completed in 18 months with activities occurring in multiple campaigns
	• The individual campaigns comprise:
	  • Installation of temporary concrete pads and conduct of the gravimetry baseline survey
	  • First campaign for installation of subsea umbilicals, risers, and flowlines
	  • FPU mooring pre-lay surveys and suction pile installation
	  • Second campaign for installation of subsea umbilicals, risers, and flowlines

Approximate estimated duration	Approximately 18 months (cumulative) for the survey and installation activities

Infrastructure	• Pre-installation of the following infrastructure:
	  • 3 x flowlines
	  • 1 x riser base manifold and foundation
	  • 13 - 25 x mud mats
	  • 7 x in-line structures & 6 x flowline end terminations
	  • 9 x umbilical termination assemblies
	  • 3 x subsea distribution units/assemblies
	  • 16 x umbilicals and jumpers, additional flying leads
	  • 1 x trunkline spool and support
	  • 20 x mooring legs and 20 x suction piles for FPU
	  • Up to 265 concrete pads for future gravimetry surveys
	• Temporary installation of the following infrastructure and related activities:
	  • 1 x suction pile and leader wire for flowline lay initiation
	  • Installation aids (i.e. transponder arrays, frames)
	  • Wet-storing of dynamic umbilicals and risers
	  • Pre-progress and post-installation surveys
	  • Baseline gravimetry survey
	  • Pressure and leak testing
	  • Contingent activities including debris removal as required, transportation of equipment to field with tug and barge spread

Vessels	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Operational Areas and Exclusion zones	• The Operational Area for activities includes a radius of:
	  • 1000 m around location of the outermost concrete pads
	  • 1500 m around location of subsea infrastructure
	  • 2000 m around future location of FPU
	• Temporary 500 m exclusion zone around vessels to manage vessel movements
	• An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities

Distance to nearest town	• ~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier
Distance to nearest marine park/nature reserve	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)

Table 2 - Summary of proposed installation locations

Structure	Approx. Water Depth (m)	Latitude	Longitude	Permit Area
For installation				
Start of Flowline A and associated infrastructure	~ 944	19° 55' 08.55"S	113° 13' 47.80"E	WA-61-L
End of Flowline A and associated infrastructure	~ 914	19° 46' 16.45"S	113° 11' 39.00"E	WA-61-L
Start of Flowline B and associated infrastructure	~ 945	19° 55' 12.11"S	113° 13' 45.17"E	WA-61-L
End of Flowline B and associated infrastructure	~ 919	19° 52' 30.84"S	113° 06' 39.90"E	WA-61-L
Start of Flowline C and associated infrastructure	~ 945	19° 55' 14.51"S	113° 13' 43.94"E	WA-61-L
End of Flowline C and associated infrastructure	~ 912	19° 53' 47.55"S	113° 06' 54.73"E	WA-61-L
Northern end of mooring array	~ 915	19° 54' 40.48"S	113° 14' 31.38"E	WA-61-L
Southern end of mooring array	~ 958	19° 56' 26.98"S	113° 14' 28.11"E	WA-61-L
Eastern end of mooring array	~ 955	19° 55' 34.48"S	113° 15' 26.04"E	WA-61-L
Western end of mooring array	~ 948	19° 55' 32.77"S	113° 13' 33.29"E	WA-61-L

Environment That May Be Affected (EMBA)

The environment that may be affected (EMBA) is the largest spatial extent where the Subsea Infrastructure Installation Activity could potentially have an environmental consequence (direct or indirect impact). The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this Environment Plan (EP) is determined by a highly unlikely release of marine diesel to the environment as a result of vessel collision. This is depicted in Figure 2.

The EMBA does not represent the extent of predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release.

This means in the highly unlikely event a hydrocarbon release does occur, the EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

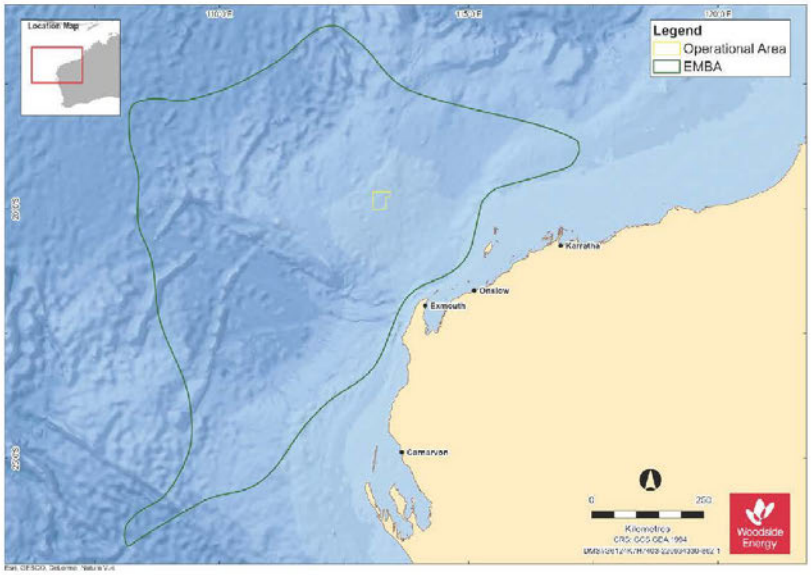


Figure 2. Environment that May Be Affected by the Subsea Infrastructure Installation Activity.

Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the Subsea Infrastructure Installation Activity.

A number of mitigation and management measures for the Subsea Infrastructure Installation Activity are outlined in **Table 3**.

Table 3 - Summary of key risks and/or impacts and preliminary management measures for the Subsea Infrastructure Installation Activity.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Planned			
Physical presence - interactions with other marine users	• Several vessel types will be required to complete the activity including a pipelay vessel (PV), heavy lift vessel (HLV), construction vessels, survey vessels and support vessels. Vessels will not usually anchor within the Operational Area. • The physical presence and movement of project vessels within the Operational Area has the potential to displace other marine users. • Some vessels will be moving continually within the Operational Area. The activity may not be executed as a single campaign or in a consecutive sequence, therefore the presence of vessels may occur at any time during the period of the EP. • Helicopters or crew transfer vessels will be used to transport personnel to and from project vessels.	• Other vessels in the Operational Area, which may include commercial fishing and shipping, and defence, may experience temporary and localised displacement during the activity. • The Operational Area is not an area of high commercial fishing activity. Commercial fishing vessels will not be excluded from the entire Operational Area for the total duration of the Subsea Infrastructure Installation Activity. Displacement of fishing activities will be slight, temporary and have no lasting effect. • The Operational Area does not overlap with Australian Maritime Safety Authority (AMSA) fairways and therefore impacts to commercial shipping vessels are not expected. • Tourism and recreation within the Operational Area are expected to be limited due to the distance offshore and water depths. Given the location, and short-term nature of activities, no impacts are expected.	• Vessels adhere to regulatory requirements for navigational safety. • Establish temporary 500 m exclusion zones around vessels which are communicated to marine users. • Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and on completion of activities. • Notify the Australian Hydrographic Service (AHS) prior to commencement of the activity to enable them to update maritime charts, so that marine users are aware of the activity. • Consult with relevant persons so that they are informed of the proposed activities.
Physical presence – seabed disturbance	• Seabed disturbance may result from subsea infrastructure installation, mooring pre-lay, Remotely Operated Vehicle (ROV)/survey activities, and from contingency activities including wet buckle remediation and span rectification.	• Seabed disturbance has the potential to result in change in habitat and water quality which may in turn cause injury and/or mortality to fauna. However, impacts from seabed disturbance will be minor as they are expected to be highly localised and temporary in nature. • Seabed disturbance is not expected to impact adversely on biologically important behaviours or biologically important habitat, including critical habitat. Displacement of individuals will not result in significant impacts at a population level.	• ROV inspection will be undertaken post-installation to confirm installation aids have been removed. • Infrastructure will be placed on the seabed within the predefined design footprint using positioning technology to limit seabed disturbance.

1 These mitigation and management measures are subject to change through the consultation and subsequent assessment process and may not represent content in the publicly available EP or in the final plan once accepted.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Light emissions	• Project vessels will use external lighting to navigate and conduct safe operations at night. • Vessel lighting will also be used to communicate vessels' presence to other marine users (i.e. navigation/ warning lights).	• Light emissions can affect fauna (such as marine turtles and birds) in two main ways: 1. Behaviour: artificial lighting has the potential to create a constant level of light at night that can override natural levels and cycles. 2. Orientation: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation. • Given the distance from shore, low sensitivity of receptors offshore (i.e., no presence of nesting turtles and low likelihood of hatchling turtles in the offshore environment), light emissions to marine turtles are unlikely to result in more than slight, localised behavioural disturbance to isolated transient individuals, with no lasting effect to the species. • As the Operational Area is offshore and away from islands or other emergent features, the presence of seabirds or shorebirds is considered likely to be of a transient nature only. Behavioural disturbance to birds from light is expected to be slight and localised to within the vicinity of vessels and will not seriously disrupt the lifecycle of an ecologically significant proportion of migratory birds.	• Lighting limited to minimum required for navigation and safe operational requirements with the exception of emergency events.
Atmospheric emissions and greenhouse gas (GHG) emissions	• Atmospheric emissions GHGs will be generated by the project vessels from internal combustion engines and incineration activities.	• Emissions from project vessels could result in temporary, localised reductions in air quality in the immediate vicinity of the vessels. • Given the offshore location of the Operational Area, and the low volumes of atmospheric emissions which will be generated, biodiversity, ecological integrity, social amenities and human health will not be impacted and the potential impact to air quality is negligible. • Given the nature and scale of GHG emissions from vessel fuel usage for this activity, the potential GHG impact and risk from this activity is considered negligible.	• Comply with regulatory requirements for marine air pollution and GHG emissions reporting. • Plan vessel operations where practicable to minimise fuel consumption and associated GHG/air emissions. • Track and review GHG emissions during the activity to identify further opportunities to improve efficiencies where practicable.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Routine acoustic emissions	• Project vessels will generate noise in the air and underwater due to the operation or thruster engines, propellers and on-board machinery etc. • Underwater noise may also be generated by geophysical sources during surveys, positioning equipment (transponders), Dynamic Positioning systems on vessels, and helicopters.	• Elevated underwater noise can affect marine fauna including marine mammals, turtles and fishes in three main ways: 1. By causing direct physical effects, including injury or hearing impairment. Hearing impairment may be temporary or permanent. 2. Through disturbance leading to behavioural changes or displacement from important areas. The occurrence and intensity of disturbance is highly variable and depends on a range of factors relating to the animal and situation. 3. By masking or interfering with other biologically important sounds (including vocal communication, echolocation, signals and sounds produced by predators or prey). • Marine fauna associated with the Operational Area will be predominantly pelagic fish species, with the potential for species such as whale sharks, rays, marine turtles and whale species to transit through the Operational Area. There are no marine fauna Biologically Important Areas (BIAs) within the Operational Area. Therefore, potential impacts from vessel noise are likely to be restricted to temporary avoidance behaviour to individuals and are therefore considered slight or lower (negligible).	• Comply with regulatory requirements for interactions with marine fauna to prevent adverse interactions. • Collect data on opportunistic sightings of pygmy blue whales to gauge presence and behaviour. • Implement adaptive management procedure during vessel activities, to reduce risk to marine fauna.
Routine and non-routine discharges - project vessels and installation	• Sewage, greywater and putrescible waste will be discharged from project vessels. • Bilge water, deck drainage and brine and cooling water may also be discharged.	• The main impact associated with ocean disposal of sewage and other organic wastes (i.e., putrescible waste) is eutrophication. Eutrophication occurs when the addition of nutrients, such as nitrates and phosphates, causes adverse changes to the ecosystem including short-term, localised impacts to water quality. • Impacts to water quality from planned discharges above a slight or negligible level are not expected because of the minor quantities involved, the expected localised mixing zone and high level of dilution into the open water marine environment of the Operational Area. • Similarly, although some marine fauna may transit the Operational Area, the potential for impact remains slight or lower (negligible) due to the localised nature of discharges and rapid dilution.	• Routine marine discharges will be managed according to regulatory requirements. • Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.
Routine and non-routine discharges - subsea infrastructure installation	• Small volumes of preservation fluid will be discharged during installation of pre-filled risers, jumpers and spool, and during flood, clean, gauge and leak testing of flowlines, production risers, gas export system and jumpers. • Unplanned contingent discharges may occur if wet buckling of flowline occurs.	• The discharges are expected to result in slight or lower (negligible) impacts including a temporary decline in water quality and sediment quality around the discharge locations with no accumulation and no lasting effect predicted. • Based on the low likelihood of pelagic fish species being exposed to the discharge, the ability of marine fauna to move away from the discharge plume and the potential for impacts to occur from contingent treated seawater discharge, potential impacts are expected to be slight or lower (negligible), localised and short-term with no lasting effect at the population or bioregional scale. • Impacts from contingent discharges of treated seawater on Key Ecological Features (KEFs) are expected to be slight with no lasting effect.	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Pre-commissioning procedures developed and followed so that appropriate chemical concentrations are maintained. • A flowline installation procedure will be in use to aid in the prevention of flowline wet buckle reducing the likelihood of unplanned contingent discharges from flowline dewatering.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Unplanned			

Unplanned hydrocarbon release – vessel collision	• Project vessels will use marine diesel fuel, meaning a vessel collision involving a project vessel or third-party during the activity may result in the release of marine diesel.
	• For a collision to result in the worst-case scenario diesel release, several factors must occur as follows:
	  • Identified causes of vessel interaction must result in a collision.
	  • The collision has enough force to penetrate the vessel hull and in the exact location of the fuel tank.
	  • The fuel tank must be full or at least of volume which is higher than the point of penetration.
		• In the highly unlikely event of a vessel collision causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur.
		• Modelling of a surface release of marine diesel was undertaken at a location within the Operational Area.
		• Marine diesel is a relatively volatile, non-persistent nature hydrocarbon with up to 35% evaporating within the first 24 hours.
		• Potential impacts across the EMBA were assessed including receptors such as plankton, mangroves, seabirds and migratory shorebirds, saltmarshes, coral, tourism, recreation and cultural heritage (for example).
		• Taking into account receptor sensitivity, the receptors were rated as having a potential consequence level of minor or less (slight or negligible).
			Preventing vessel collision:
			• Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.
			• Consult with relevant persons so that other marine users are informed and aware, reducing the likelihood of a collision.
			• Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision.
			• Develop a management plan for simultaneous operations when working in vicinity of other Woodside operations/ activities.
			• Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and upon completion of activities.
			• Notify the Australian Hydrographic Service (AHS) prior to commencement of the activity to enable them to update maritime charts, ensuring marine users are aware of the activity.
			Spill response arrangements:
			• Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested so that the OPEP can be implemented as planned.
			• In the event of a spill, emergency response activities would be implemented in line with the OPEP.

Unplanned hydrocarbon release - bunkering	• Accidental loss of hydrocarbons to the marine environment during bunkering/ refueling may occur caused by partial or total failure of a bulk transfer hose or fittings due to operational stress or other integrity issues.	• A marine diesel surface release is expected to be confined to within several kilometers of the release site and well within the EMBA identified for the vessel collision scenario. • This unplanned marine diesel release has the potential to result in changes in water quality and fauna behaviour. Receptors considered in the risk assessment for this unplanned event included marine mammals, marine reptiles, fish, sharks and rays. Taking into account receptor sensitivity, the receptors were rated as having a potential consequence level of minor or less (slight or negligible).	**Preventing unplanned hydrocarbon release due to bunkering:** • Comply with regulatory requirements for the prevention of marine pollution. • Liquid chemical and fuel storage areas bunded or secondarily contained when they are not being handled or temporarily moved. • Appropriate bunkering equipment kept and maintained, and contractors to follow procedures and requirements for bunkering and refueling to reduce the likelihood of a spill. **Spill response arrangements:** • Maintain and locate spill kits in close proximity to hydrocarbon storage and deck areas for use to contain and recover deck spills. • Arrangements supporting the OPEP will be tested so that the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Unplanned discharge – deck and subsea spills	• Accidental, unplanned loss of liquid chemical or fuels from equipment/storage on deck or subsea survey/installation equipment.	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (<50 L) are anticipated, resulting in very short-term impacts to water quality and limited to the immediate release location. • As a result of a change in water quality, further impacts to receptors may occur, however impacts to marine fauna are expected to be limited to temporary irritation of sensitive membranes to individuals and are considered slight or less (negligible).	• Comply with regulatory requirements for the prevention of marine pollution. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/ moved temporarily. • Spill kits positioned in high-risk locations around the vessel (near potential spill points such as transfer stations). • Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Below-deck storage of hydrocarbons and chemicals where practicable.
Unplanned discharge – loss of solid hazardous/ non-hazardous solid waste / equipment	• Accidental, unplanned loss of hazardous or non-hazardous solid wastes/equipment to the marine environment may occur if dropped or blown overboard.	• The potential impacts of hazardous or non-hazardous solid wastes and equipment accidentally discharged to the marine environment include contamination of the environment as well as secondary impacts relating to potential contact of marine fauna with wastes. The temporary or permanent loss of waste materials/equipment into the marine environment is not likely to have a significant environmental impact, based on the location of the Operational Area, the types, size and frequency of wastes that could occur and species present.	• Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes. • Implement waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of waste generated. • Solid waste/equipment dropped to the marine environment 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.
Unplanned seabed disturbance	• Accidental, unplanned loss of infrastructure during installation from the installation vessels. • Dropped objects may also result in unplanned disturbance of benthic habitat.	• Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities and is therefore considered to present a negligible risk. • Potential impacts to KEFs which intersect the Operational Area of the activity are considered to be minor as they would be limited to the footprint of a dropped object resulting in potential highly localised and temporary change in habitat.	• Subsea lifts of equipment will occur overboard in a designated deployment zone to reduce the risk of dropped objects in proximity to existing subsea infrastructure that could potentially cause damage/leaks. • Installation vessel inductions include control measures for dropped object prevention. • Dropped objects to be recovered and relocated where safe and practicable to do so. • Where retrieval is not practicable and/ or safe, material items (property) lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Unplanned interaction with marine fauna	• Vessel movements have the potential to result in collisions between the vessel (hull and propellers) and marine fauna. • The factors contributing to the frequency and severity of impacts due to collisions vary greatly due to vessel type, vessel operation (specific activity, speed), physical environment (e.g. water depth) and the type of animal potentially present and their behaviours.	• The risk of vessel collision with marine mammals is present year-round but is seasonally elevated for species such as humpback whales and pygmy blue whales during migration periods and within migration BIAs. The Operational Area does not overlap with cetacean BIAs or critical habitat. Given this, and the short duration of activities within the Operational Area, and the slow speeds at which project vessels operate, collisions with cetaceans are considered highly unlikely. • It is expected marine turtles will respond to vessel presence by avoiding the immediate vicinity of vessels, and combined with low vessel speed, this will reduce the likelihood of a vessel-turtle collision or entrainment during dredging activities.	• Comply with regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring.
Accidental introduction of invasive marine species (IMS)	• Vessels transiting to the Operational Area may be subject to marine fouling whereby organisms attach to the vessel hull. • IMS could be present as biofouling on the vessel hull or on immersible equipment (survey equipment, ROV, etc.) and could be translocated to the Operational Area and transferred directly to the seafloor or subsea structures where they could establish. • Organisms can also be drawn into ballast tanks during onboarding of ballast water.	• It is not credible for IMS to be introduced and establish on the seabed or subsea structures in the Operational Area as these deep waters are not conducive to the settlement and establishment of IMS. • There ispotential for the transfer of IMS between the project vessels, albeit remote	• Ballast water and biofouling will be managed according to regulatory requirements, including the Australian Ballast Water Management Requirements, and the Australian Biofouling Management Requirements, as applicable. • Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment that enter the Operational Area.

Feedback

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before **17 February 2023** via:

E: Feedback@woodside.com.au
Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities: **www.woodside.com/sustainability/consultation-activities**.

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 they arise.

Please note that your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

1.107 Simplified Consultation Information Sheet (January 2023)

Woodside Energy

STAKEHOLDER CONSULTATION

SUMMARY INFORMATION SHEET

January 2023

SCARBOROUGH SUBSEA INFRASTRUCTURE INSTALLATION

This is a summary of the activity in plain English. More detailed information is included in the WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan Information Sheet.

Overview

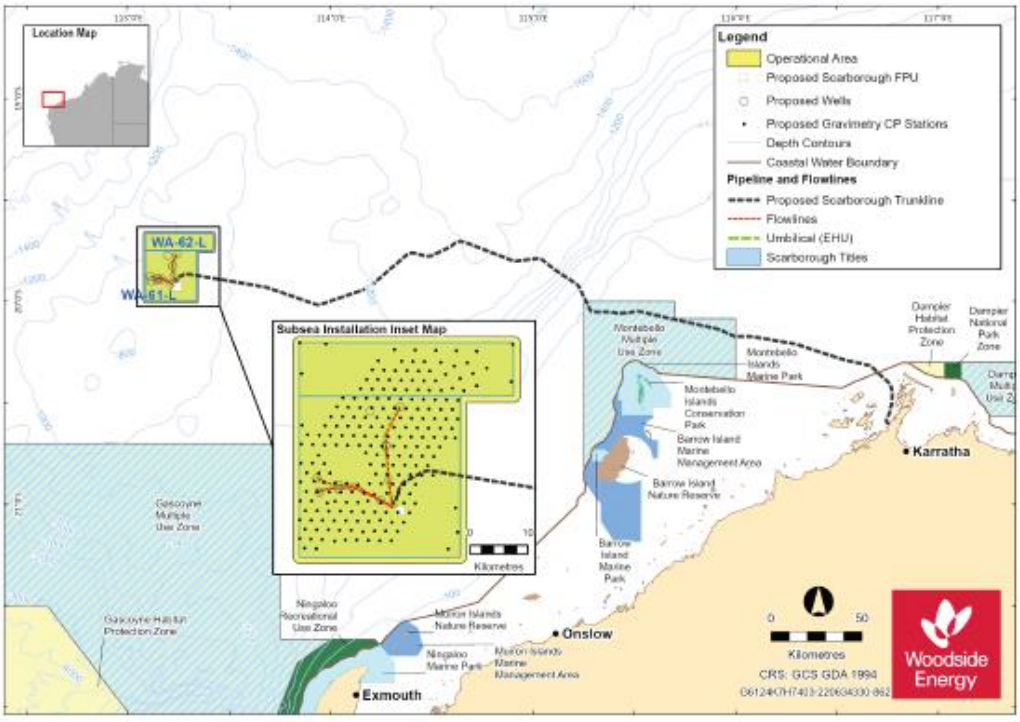
Woodside plans to install pipes and other equipment on the sea floor so gas can be carried to a proposed Floating Production Unit (FPU). This activity is called Subsea Infrastructure Installation. The activity will be divided into the following parts:

1. **Gravimetry Survey** – This involves the use of equipment called a gravity metre that records information about the gas field beneath the sea floor.
2. **Subsea Equipment Installation** – Placement of subsea equipment on the sea floor. The installation of this equipment will be carried out using large construction vessels.

This work will take place approximately 380km north-west of Karratha, at a water depth of approximately 950m.

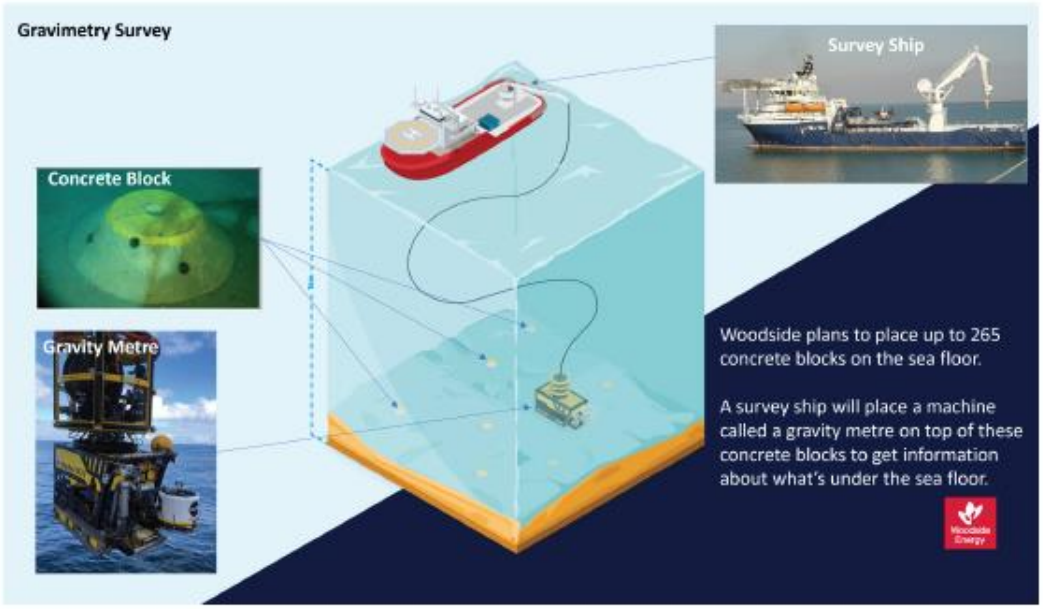
Woodside is planning to start the Subsea Infrastructure Installation work upon the acceptance of the Environment Plan, and the aim is to start work around the second half of 2023. The activity is expected to take up to around 18 months to complete.

A map of the work area is provided below.



Work Method

Gravimetry Survey - The gravimetry survey involves placing up to 265 concrete blocks on the seabed. The concrete blocks shown in the image below, are about 1.6m wide. An underwater remotely operated vehicle (ROV) will be used to put a machine called a gravity metre on top of the concrete blocks. The gravity metre rests on the block long enough for a measurement to be taken, and then the ROV picks up the gravity metre and moves it to the next block. This survey is carried out to monitor pressure and other changes in the gas field under the sea floor. An illustration of this is below.



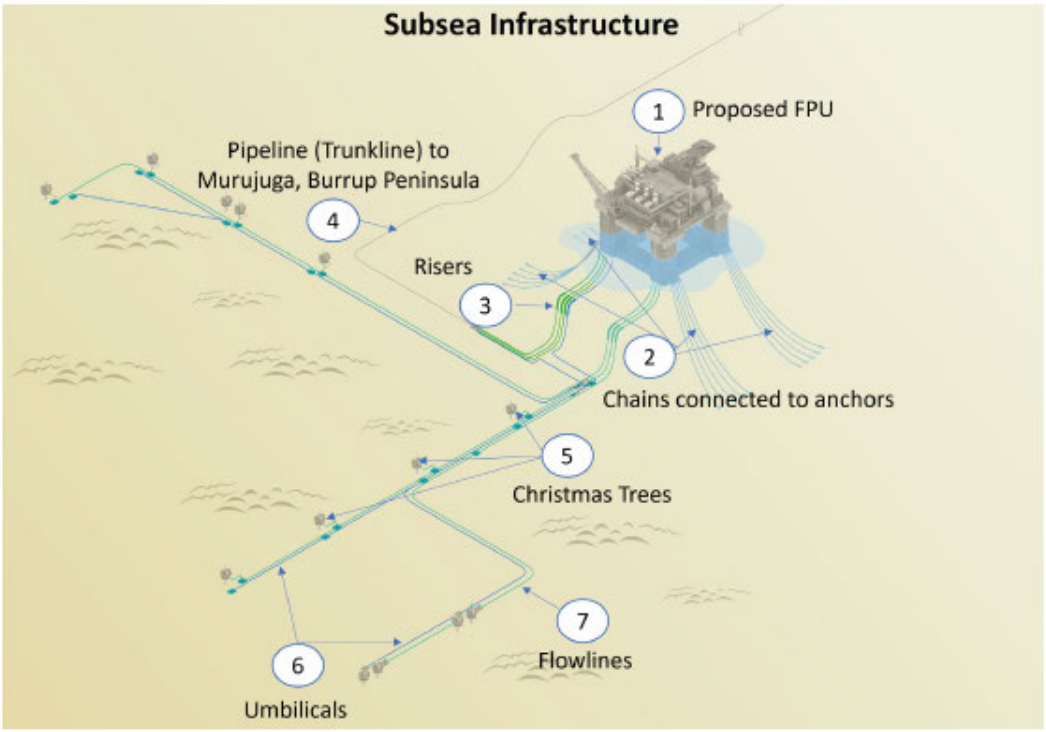
Subsea Equipment Installation - The equipment that Woodside will install on the sea floor includes:

- Chains connected to large anchors that will hold the proposed FPU in place
- Pipes called risers that take gas from the proposed FPU to the pipeline (called a trunkline) that goes to the Pluto Gas Plant
- Large cables called umbilicals that will provide power and communication to the equipment on the sea floor
- Pipes called flowlines that will transport the gas to the proposed FPU
- Support structures that will hold the pipes and other equipment in place
- Other cables and equipment to allow gas wells to operate

Further details and quantities of the equipment being installed can be found in the detailed Information Sheet. This equipment will be installed by large construction vessels.

Other equipment such as Christmas Trees (which control the flow of gas from the wells), the trunkline and the proposed FPU will be installed under separate work programs.

An illustration of this work is shown below



Environmental Impacts and Management

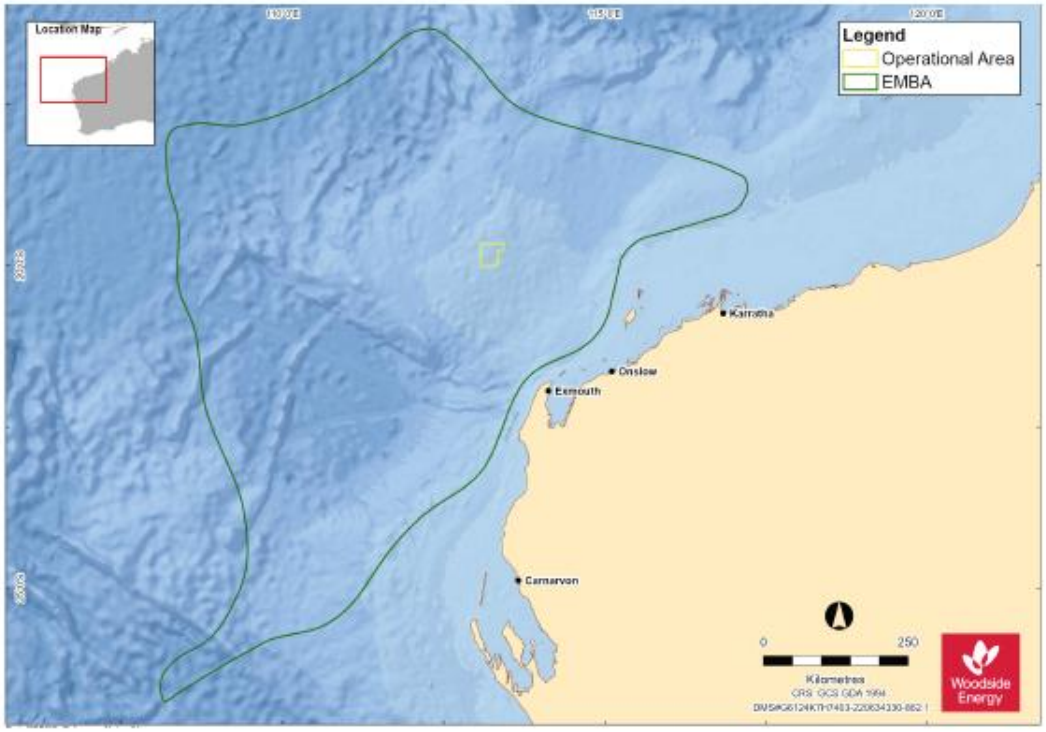
This work program includes Planned Activities but may also result in Unplanned Activities. Both Planned and Unplanned Activities may impact the environment. Woodside manages the work program to reduce impacts and risks to as low as practical.

Planned Activities are activities that Woodside knows will happen as part of this work program. For example, Planned Activities will include other marine users being temporarily stopped from accessing the work area, and the marine vessels used for the work may generate underwater noise, light emissions, atmospheric emissions, and routine discharges (such as sewage, waste, and deck drainage), and other authorised waste. Installation of the concrete pads and subsea equipment may also result in seabed disturbance.

Unplanned Activities are not planned as part of the work program, but may be the result of an accident, incident, or emergency situation. It is highly unlikely that there will be an Unplanned Activity. Unplanned Activities might include a spill of fuel or oil from a vessel collision, a spill on the deck of a vessel (such as during refuelling), unplanned seabed disturbance, accidental collision with marine animals, waste entering the environment and accidental introduction of invasive species from outside the region.

A table showing all planned and unplanned activities, potential impacts, and management measures for each is included in the attached Information Sheet, Table 3.

The total area over which unplanned events could have environmental impacts is shown in the map below. This is referred to as the environment that may be affected (EMBA). The location in which the Subsea Infrastructure Installation activity will occur, known as the Operational Area, is also shown on the map below. In the highly unlikely event such as a fuel spill from a vessel collision, the entire EMBA will not be affected. The part of the EMBA that is affected will only be known at the time of the event.



Providing feedback

If you have an interest in the area of the "environment that may be affected" (EMBA) by this work program and would like more information or have any concerns, you can tell Woodside by calling **1800 442 977** or sending an email to **feedback@woodside.com.au.** Please contact Woodside before **20th February 2023** so your questions or concerns can be considered during the environmental approval process.

If you would prefer to speak to the government directly, they can be contacted on **+61 (0)8 6188 8700** or send an email to **communications@nopsema.gov.au.**

Conclusion

Woodside produces energy that Western Australia, Australia, and the world needs. Woodside has made this energy from its oil and gas projects in Western Australia for over 35 years safely, reliably, and without any major environmental incident. Woodside is very proud of this legacy.

There are always potential risks with projects like this. Woodside has carefully planned this work program so that the risk of environmental impact is reduced to as low as reasonably practical and of an acceptable level. There are also strict government laws in place to protect the environment. Woodside complies with these laws and has systems in place to keep following these laws and rules for each project it undertakes.

If you would like information about Woodside's work to study and care for the environment, you can find it at **https://www.woodside.com/sustainability/environment.**

Further Information

You can find the details Consultation Information Sheet for proposed activity on our website: **https://www.woodside.com/sustainability/consultation-activities.**

www.woodside.com

Woodside Energy

1.108 Simplified Overview Consultation Information Sheet (January 2023)

Woodside Energy

STAKEHOLDER CONSULTATION

OVERVIEW INFORMATION SHEET

January 2023

SCARBOROUGH PROJECT

Introduction

This is a summary of some of the work Woodside will be doing for its Scarborough Project. Most of this work will take place in the ocean approximately 375km northwest of Karratha.

Woodside

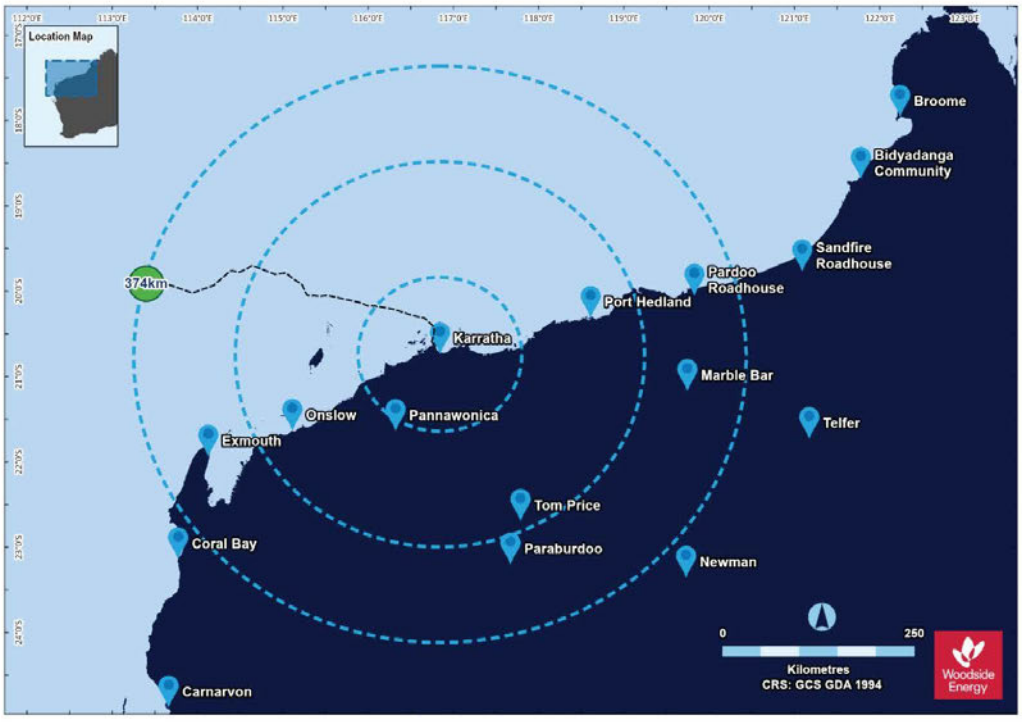
Woodside has been operating safely for over 35 years, delivering gas and oil to customers in Australia and around the world safely, reliably, and without any major environmental incident. Woodside is very proud of this legacy.

You can find more information about Woodside on our website: **www.woodside.com.**

Scarborough Project

Scarborough is a gas field under the sea floor about 375 km northwest of Karratha. Woodside plans to bring this gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline (called a trunkline) that is approximately 430km long, to Woodside's Pluto gas plant.

The map below shows where the Scarborough project, including the trunkline, is located.



You can find more information about the Scarborough project on Woodside's website:

https://www.woodside.com/what-we-do/growth-projects/scarborough

Work for the Scarborough Project

This is an overview of some of the programs which make up the Scarborough project. Woodside is planning to commence work on these programs once the environmental plans have been approved. There will be further work programs that will form part of the Scarborough project.

The current work programs are:

1. Laying the pipeline from the Scarborough gas field to the shore at Murujuga (Burrup Peninsula). The pipeline (called a trunkline) is approximately 430 kilometres long. This is called **Seabed Intervention and Trunkline Installation.**
2. A survey of what is underneath the seafloor. These are called **Seismic Surveys.**
3. Drilling and installing between 8 and 10 subsea gas wells on the sea floor to extract gas from the Scarborough gas field. This is called **Drilling and Completions.**
4. Installing pipes and other equipment on the sea floor so gas can be carried to a proposed Floating Production Unit (FPU). This is called **Subsea Infrastructure Installation.**

Information sheets for these work programs are available on our website:

https://www.woodside.com/sustainability/consultation-activities.

www.woodside.com

Woodside Energy

1.109 Newspaper advertisements (January 2023)

- The Australian, The West Australian, Pilbara News, Midwest Times, North West Times (18 January 2023)
- Geraldton Times (20 January 2023)

The Australian – 18 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 633 177 277) is proposing to conduct four activities in Commonwealth waters of the West Australian coast for the Scarborough Project, as described below.

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future 'time-lapse' reservoir surveillance.		
Location:	214 km north-west of Exmouth, size of operational area: ~9,200 km²		
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	~ 55–70 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	May 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.		
Location:	244 km north-north-west of Exmouth, 344 km west-north-west of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	~ 50–60 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	July 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities		
Location:	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 24 months across multiple campaigns		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.		
Location:	244 km north-north-west of Exmouth, 374 km west-north-west of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely, unplanned event, could have an impact based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

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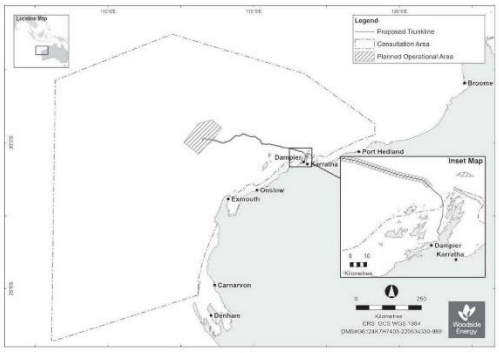

Consultation Participation and Feedback

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Iran raids coffers to help fight protesters

MELANIE SWAN

'The security forces violently suppressing protests across Iran have been allocated $US8bn in the latest budget, despite the country's collapsing economy.

Announced several weeks late by the government, the budget for the Islamic Revolutionary Guard Corps (IRGC) has been raised by 28 per cent. However, experts estimate the actual income of the militia could be as high as $US37bn ($24bn).

The secretive IRGC also receives income from illicit oil sales and is known to fund terrorist groups across the region, including Hezbollah in Lebanon and the Houthis in Yemen.

Jason Brodsky, policy director of United Against Nuclear Iran, said "Leaked audio tapes some months ago revealed (supreme leader Ayatollah Ali) Khamenei directed 90 per cent of the revenue generated by Yas Holding, an IRGC-linked company, be given to the IRGC's Quds Force, so they are not solely dependent on the national budget."

Last year Hamas leader Ismail Haniyeh revealed that Iran had given $US70m to the militant Palestinian group, proscribed by Britain as a terrorist organisation.

British politicians are calling for the IRGC to be designated as a terrorist group. Foreign Secretary James Cleverly announced last month that sanctions had been imposed on the force after it emerged that it was planning attacks on Iranian dissidents in the UK.

The budget of Iran's regular army has also been increased by 36 per cent to more than $US2bn and the police budget will rise 44 per cent to $US1.5bn.

Since protests began in September, triggered by the death in custody of Mahsa Amini, 22, an estimated 19,401 Iranians have been detained. This includes 713 students and 168 children, while 524 people have been killed, according to Iran's Human Rights Activists News Agency. At least four protesters have been executed.

Iranian journalist Kourosh Ziabari said the "militarisation of the budget" ignores the needs of the population. "Despite the budget being drafted for a year of austerity, the outlays for propaganda organisations, including the Islamic Republic of Iran Broadcasting (whose budget rose 49 per cent or about $US200m) and religious and cultural entities that usually have little benefits for the general public, have been augmented exponentially," he said.

Many Iranians are unable to afford food and to pay their electricity bills as the country's currency continues to plummet. Prices have risen so rapidly that consumption halved last year in the once bustling marketplace of the northern city of Kashi, fruit sellers and bakers can no longer make ends meet.

Inflation is at over 50 per cent, and more than half the population is being pushed below the poverty line, according to the Statistical Centre of Iran. Iranian economist Mardo Soghom said Iran was selling its oil at heavily discounted prices as Western sanctions crippled the country's energy revenues. He said it was being sold to China for $US37 a barrel, which meant only $US7 profit per barrel.

THE TIMES

UK vows payback after execution

Britain has vowed more reprisals against what it said was Tehran's "weakened and isolated regime" after it executed a UK-Iranian dual national.

Following the killing of Alireza Akbari for allegedly spying, Britain summoned Iran's most senior diplomat and recalled its ambassador. But despite slapping sanctions on Iran's prosecutor general it stopped short of demands to ban the Islamic Revolutionary Guard Corps. The government is wrestling with the fate of other dual nationals held by the Islamic regime, and with the strategic aim of restoring an international nuclear pact with Iran.

AFP

Italy mourns golden screen goddess

ELLA IDE
ROME

One of the last stars of the golden age of Hollywood, Italy's Gina Lollobrigida, who has died at the age of 95, was famed for her biting wit and sensual beauty.

Bringing much-needed glamour and pizzazz to the post-war period, she stirred hearts whether as an onscreen gypsy, queen or single mother.

Humphrey Bogart, who she starred opposite in her breakthrough movie Beat the Devil in 1953, said Lollobrigida made "Marilyn Monroe look like Shirley Temple".

Best known for Luigi Comencini's 1953 classic Bread, Love and Dreams, and Jean Delannoy's 1956 The Hunchback of Notre Dame, Lollobrigida starred with many of the leading men of the time, including Errol Flynn and Burt Lancaster.

While she had a "crazy good time" with a playful Bogart, not all the shoots were as fun.

Her co-star in the wartime romance Never So Few, Frank Sinatra, had "zero sense of humour", shrieked Variety in 2008.

Luigia "Gina" Lollobrigida was born on July 4, 1927 in Subiaco, a mountain village 50 kilometres (30 miles) east of Rome.

Luigia "Gina" Lollobrigida began to study sculpture after her family moved to Rome, from the mountain village of Subiaco, 30km away. She supported herself by singing and modelling before attracting the attention of Italian film producers.

"I refused when they offered me my first role. They insisted again ... So I told them my price was one million lire, thinking that would put a stop to the whole thing. But they said yes!" she told Vanity Fair.

Italians then dubbed her their answer to Elizabeth Taylor after her signature movie La Donna Più Bella del Mondo (The Most Beautiful Woman in the World) in 1955.

She had an infamous long-standing rivalry with fellow Italian diva Sophia Loren. When Loren claimed she was the "bustier" one, Lollobrigida hit back, saying Loren could play a peasant, but never a lady, according to the Hollywood Reporter.

Affectionately dubbed La Lollo by fans, she played the queen in Solomon and Sheba in 1959 and a single mother in Buona Sera, Mrs Campbell, garnering her a Golden Globe nomination.

She was pursued for years by US tycoon Howard Hughes, who brought her to Hollywood, and by Prince Rainier of Monaco, at the time married to Princess Grace.

"I've had many lovers and still have romances," she was quoted by several British newspapers as saying in 2000. "I am very selfish." She was married in her early 20s to Slovenian doctor Milko Skofic, with whom she had a son before they divorced in 1971.

In 2006, aged 79, she announced plans to marry Spanish long-time partner Javier Rigau Rafols, 34 years her junior, but they split up a year later.

Lollobrigida accused him in 2013 of having tricked her into signing documents allowing him to marry her by proxy, with a stand-in, in a civil ceremony in Spain.

AFP

Gina Lollobrigida was said to have made Marilyn Monroe 'look like Shirley Temple'

Lollobrigida with Marcello Mastroianni in the 1960 film Where The Hot Wind Blows; and meeting Princess Margaret at London's new National Film Theatre in 1957

"My experience has been that, when I have found the right person, he has run away from me," she told Vanity Fair in 2015. "I am too strong, too popular."

The marriage was annulled by a Vatican court in 2019.

Lollobrigida won seven David di Donatello awards during her career, Italy's Oscar equivalent. But by the 1970s she had turned from acting to sculpture and photojournalism, including getting a scoop interview and photo shoot with Cuban leader Fidel Castro.

She travelled the world, snapping celebrities from Henry Kissinger to Indira Gandhi, Maria Callas, Liza Minnelli, Salvador Dali, Audrey Hepburn and Ella Fitzgerald.

She also nurtured political ambitions in 1999 she ran, unsuccessfully, for a seat in the European parliament.

She was back in the spotlight in 2021, amid a bitter legal battle with her son over her fortune.

Italy's Supreme Court ruled that she needed a legal guardian to stop people preying on her wealth, because of a "weakening" in her perception of reality.

Despite that, last year she attempted once more to enter politics, with a failed bid for a seat in the Italian parliament.

In a 2019 interview with AGI news agency, Lollobrigida said she wanted to be remembered for more than just her work in cinema.

"For my sculptures and above all for my photography," she said.

AFP

The West Australian – 18 January 2023

ENVIRONMENT PLANS NOTICE

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Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future 'time lapse' reservoir surveillance.		
Location:	214 km north-west of Exmouth, size of operational area ~9,200 km²		
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	~55-70 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	May 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	~50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	July 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.		
Location:	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 21 months across multiple campaigns.		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely, unplanned event could have an impact based on weather and ocean conditions.

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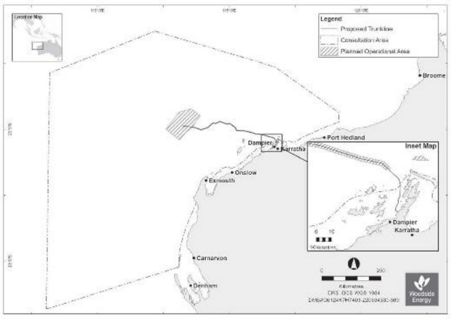

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Pilbara News – 18 January 2023

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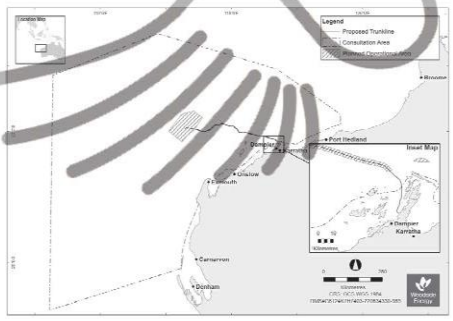

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PUBLIC NOTICES

SHIRE OF EXMOUTH

RFQ 05/2023 Supply of Solid Waste Management Services (2023 Total Solar Eclipse)

The Shire of Exmouth is seeking a suitably qualified and experienced supplier to provide the hire of fire mitigation products to Welch Street Campsite during the Total Solar Eclipse Project.

A copy of the RFQ documentation is available from TenderLink, no other provision of documentation is available. Submissions must be lodged via TenderLink Portal - portal.tenderlink.com/exmouth

Canvassing of Councillors will disqualify.

Submissions must be lodged via the TenderLink Portal no later than **2:00pm, Wednesday 1st February 2023.**

Ben Lewis
CHIEF EXECUTIVE OFFICER

SHIRE OF EXMOUTH

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Canvassing of Councillors will disqualify.

Submissions must be lodged via the TenderLink Portal no later than **2:00pm, Monday 30th January 2023.**

Ben Lewis
CHIEF EXECUTIVE OFFICER

SHIRE OF EXMOUTH

NOTICE OF ANNUAL GENERAL MEETING OF ELECTORS

In accordance with s5.29 of the *Local Government Act 1995*, the Shire of Exmouth hereby gives public notice of a General Meeting of Electors.

The meeting will be held on **Thursday 2 February 2023** at **6:00 pm** in the Mandu Mandu Function Centre, Ningaloo Centre, 2 Truscott Crescent Exmouth.

The purpose of this meeting is to:

1. Confirm the minutes of the previous General Meeting of Electors meeting held on the 3 February 2022;
2. Receival of the 2021/2022 Annual Report; and
3. General Business.

Shire of Exmouth electors are invited to submit in writing to the Chief Executive Officer, questions relating to the general meeting no later than Wednesday, 1 February 2023 to enable adequate answers to be provided at the meeting.

The Shire of Exmouth 2021/2022 Annual report is available for viewing at the Shire Administration Office, the Exmouth Library and on the Shire's website www.exmouth.wa.gov.au

Ben Lewis
CHIEF EXECUTIVE OFFICER

Proposed Local Laws

Notice is hereby given, pursuant to section 3.12 of the *Local Government Act 1995*, it is intended to make the following local laws:

Cats Local Law

The purpose of the proposed local law is to set a 'standard number' of cats that may be kept on premises and deal with cats that may be a nuisance as defined in the local law. The effect is that persons must not keep more than the standard number of cats unless provided for by the local law, the *Cat Act 2011* or its associated Regulations, or be a nuisance as defined in the local law to persons in the district.

Public Places and Local Government Property Local Law

The purpose of the proposed local law is to regulate the care, control, and management of property of and under the care, control and management of the Shire including thoroughfares. The effect is that some Shire property is set aside for particular uses, some activities are allowed only under a permit or under a determination, and others are restricted or prohibited. The local law also establishes offences for inappropriate behaviour in or on Shire property.

Extractive Industries Repeal Local Law

The purpose of the proposed local law is to repeal the Shire of *Ashburton Extractive Industries Local Law 2013*. The effect is that the Shire of *Ashburton Extractive Industries Local Law 2013* is no longer in effect.

The proposed local laws may be inspected at the Shire of Ashburton offices or on the Shire's website www.ashburton.wa.gov.au

Public submissions are invited and may be made by 4.30pm on Friday 10 March 2023, as follows:

- Online at www.ashburton.wa.gov.au
- Email to soa@ashburton.wa.gov.au
- In person at any Shire of Ashburton office
- Mail to Shire of Ashburton, PO Box 567, Tom Price WA 6751

For more information, please contact the Jasmine Bray, Manager Governance on 9188 4444.

Chantelle McGurk
Acting Chief Executive Officer

www.ashburton.wa.gov.au

EMPLOYMENT

Government of **Western Australia**
Department of **Justice**

Clinical Nurse Manager

Corrective Services

Web Search No: 011872

Level/Award/Salary: Level 3 SRN $118,070 Per Annum + Super (DCSNA)

Location: West Kimberley Regional Prison

About the role

The Department of Justice is offering an ideal opportunity for a suitably experienced and enthusiastic manager who is looking for a new experience in a primary care setting based at West Kimberley Regional Prison which is situated nine kilometres South East of the regional town of Derby. We deliver a comprehensive health care service to the prisoners of West Kimberley Regional Prison within a busy team focused environment.

Visit: jobs.wa.gov.au and key in the Web Search No. **011872** to access detailed information.

For Specific Job Related Information: Please contact **Mel Peet on (08) 9334 6096**

Closing Date: Friday 27th of January 2023.

DOJ 12827

24 MIDWEST TIMES midwesttimes.com.au WEDNESDAY, JANUARY 18, 2023

ENVIRONMENT PLANS NOTICE

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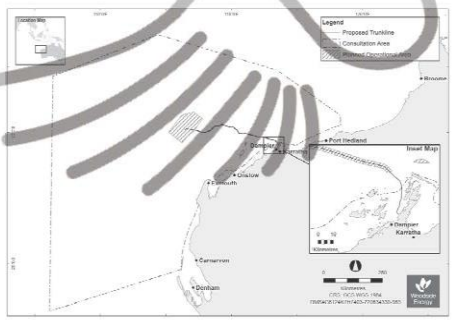

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North West Times – 18 January 2023

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Scarborough Drilling & Completions Environment Plan

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Estimated duration:	~50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	July 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.		
Location:	Activities run from the Commonwealth - State waters boundary approximately 32 km north of Dampier to the Scarborough gas fields located at Woodside-operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 24 months across multiple campaigns.		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 2021

Scarborough Subsea Infrastructure Environment Plan

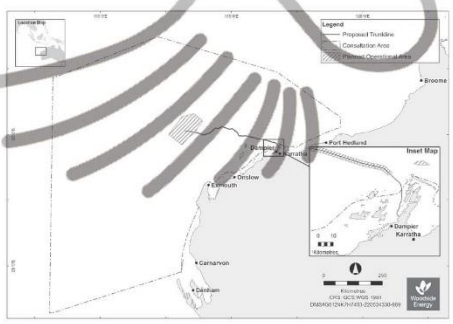
Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.		
Location:	244 km north-north-west of Exmouth, 374 km west-north-west of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a high-risk unplanned event could have an impact based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

Impacts associated with the planned activities include physical presence of vessels and interaction with other marine users, seabed disturbance (such as trenching, spoil disposal, dredging and backfill and infrastructure placement) and other vessel, drilling, seismic and construction impacts (such as noise, lighting, discharges and emissions).

Impacts that could occur due to an unplanned event include a liquid hydrocarbon release (marine diesel or other vessel fuels), gas release during drilling, vessel collision with marine fauna, accidental seabed disturbance, introduced marine species, accidental loss of waste or other discharges.



Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside to identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the drafting of the EPs in accordance with the regulations administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth).

If you would like additional information, detailed consultation information sheets are available at **www.woodside.com/sustainability/consultation-activities** You can also subscribe to receive future information on proposed activities.

If you would like to comment on the proposed activities outlined above, please contact Woodside before Friday, 17 February 2023 via:

✉ **Feedback@woodside.com** | Toll free **1800 442 977**

Please note your feedback and our response will be included in our EPs for the proposed activity, which will be submitted to NOPSEMA as required under legislation.

Please let us know if your feedback is sensitive and we will make this known to NOPSEMA upon submission of the relevant EP in order for this information to remain confidential to NOPSEMA.

PUBLIC NOTICES

Hedland Sporting Shooters Club AGM Saturday 28th Jan, 6:30pm at the club house.

Geraldton Guardian – 20 January 2023

30 GERALDTON GUARDIAN — geraldtonguardian.com.au — FRIDAY, JANUARY 20, 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct four activities in Commonwealth waters off the West Australian coast for the Scarborough Project, as described below.

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future 'time lapse' reservoir surveillance.		
Location:	214 km north-west of Exmouth, size of operational area ~9,200 km²		
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	~55-70 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	May 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	~50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	July 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.		
Location:	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 24 months across multiple campaigns.		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely unplanned event could have an impact based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

Impacts associated with the planned activities include physical presence of vessels and interaction with other marine users, seabed disturbance (such as trenching, spoil disposal, dredging and backfill and infrastructure placement) and other vessel, drilling, seismic and construction impacts (such as noise, light, air, discharges and emissions).

Impacts that could occur due to an unplanned event include liquid hydrocarbon releases (marine diesel or other vessel fuels), gas release during drilling, vessel collisions with marine fauna, additional seabed disturbance, introduced marine species, accidental loss of waste or other discharges.

Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside to identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the drafting of the EPs in accordance with the regulations administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth).

If you would like additional information, detailed consultation information sheets are available at **www.woodside.com/sustainability/consultation-activities**. You can also subscribe to receive future information on proposed activities.

If you would like to comment on the proposed activities outlined above, please contact Woodside before Friday, 17 February 2023 via:

E: **Feedback@woodside.com** | Toll free: **1800 442 977**

Please note your feedback and our response will be included in our EPs for the proposed activity, which will be submitted to NOPSEMA as required under legislation.

Please let us know if your feedback is sensitive and we will make this known to NOPSEMA upon submission of the relevant EP in order for this information to remain confidential to NOPSEMA.

1.110 Email sent to Ngarluma Aboriginal Corporation (NAC) (20 January 2023)

Good morning [redacted]

In follow up to our phone conversation, please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Ngarluma Aboriginal Corporation (NAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that NAC requires to prepare for the meeting, please let me know. In the meantime, I have attached for NAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

NAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to NAC members as required. Woodside would be pleased to speak with NAC members in addition to the NAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]
Principal Adviser First Nations Relations, Corporate Australian Operations

1.111 Email sent to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) − 20 January 2023

Good afternoon [redacted]

Thank you again for your time to speak with Woodside staff over the last couple of weeks and for making arrangements for Woodside and Nganhurra Thanardi Garrbu Aboriginal Corporation RNTBC (NTGAC) to meet on 16 February. As discussed, please see attached information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents.

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that the NTGAC and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If there is any support or specific information that NTGAC requires to prepare for a meeting, please let me know. We are also happy to discuss appropriate mechanisms for consultation. In the meantime, I have attached for NTGAC's review:

- A Summary Overview of the Scarborough project; and
- Respective Summary Information sheets

NTGAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to NTGAC members as required. Woodside would be pleased to speak with NTGAC members in addition to the NTGAC Board / office holders.

We look forward to hearing from you.

Kind regards
[redacted]

1.112 Email sent to Malgana Aboriginal Corporation − 20 January 2023

Good afternoon [redacted] and [redacted]

I had a bounce back from the malganaac@gmail.com address that was listed on ORIC so am resending to info@malgana.org.au. Please see email below.

Please feel free to reach out to me or [redacted] (copied) any time.

Kind regards
[redacted]

Good afternoon [redacted] and [redacted]

Please find attached information in relation to Woodside's proposed Scarborough gas project. The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Malgana Aboriginal Corporation (MAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that MAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for MAC's review:

2. A Summary Overview of the Scarborough project; and
3. Respective Summary Information sheets

I have copied in [redacted] who will reach out to you next week to follow up. MAC can also provide feedback directly to [redacted] or me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to MAC members as required. Woodside would be pleased to speak with MAC members in addition to the MAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]

Manager First Nations Relations | Corporate Affairs

1.113 Email sent to Nanda Aboriginal Corporation via Yamatji Marlpa Aboriginal Corporation (YMAC) − 20 January 2023

Good afternoon [redacted]

I hope this email finds you well.

Please find attached information in relation to Woodside's proposed Scarborough gas project. The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Nanda Aboriginal Corporation (NAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that NAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for NAC's review:

3. A Summary Overview of the Scarborough project; and
4. Respective Summary Information sheets

I have copied in [redacted] who will reach out to you next week to follow up. NAC can also provide feedback directly to [redacted] or me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to NAC members as required. Woodside would be pleased to speak with NAC members in addition to the NAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]
Manager First Nations Relations | Corporate Affairs

1.115 Email sent to Wirrawandi Aboriginal Corporation (WAC) − 20 January 2023

Good morning [redacted]

In follow up to previous email correspondence from my colleague [redacted], please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Wirrawandi Aboriginal Corporation (Wirrawandi) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

I understand you would like to speak with us, on this and in relation to the Nganhurra Riser Turret Mooring (RTM) information that [redacted] has already shared. I will reach out to you by phone, on **Monday 23 January** to discuss where you, and your board members would like to meet and to discuss the soonest possible date/time to do so.

If there is any support or specific information that Wirrawandi requires to prepare for the meeting, please let me know. In the meantime, I have attached for Wirrawandi's review:

- A Summary Overview of the Scarborough project; and
- Respective Summary Information sheets

WAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to Wirrawandi members as required. Woodside would be pleased to speak with Wirrawandi members in addition to the WAC Board / office holders.

I look forward to connecting with you on Monday, to arrange a meeting and to discuss the logistics of such.

Kind regards

[redacted]
Principal Adviser First Nations Relations, Corporate Australian Operations

1.116 Email sent to Yinggarda Aboriginal Corporation (YAC) via Yamatji Marlpa Aboriginal Corporation (YMAC) − 20 January 2023

Good afternoon [redacted]

Further to recent communications, please find attached information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Yinggarda Aboriginal Corporation (YAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that YAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for YAC's review:

- A Summary Overview of the Scarborough project; and
- Respective Summary Information sheets

YAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to YAC members as required. Woodside would be pleased to speak with YAC members in addition to the YAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]
Manager First Nations Relations | Corporate Affairs

1.117 Email sent to Yindjibarndi Aboriginal Corporation − 20 January 2023

Good morning [redacted]

In follow up to a telephone conversation with my colleague [redacted] on 6 January, and her subsequent email correspondence regarding the Nganhurra Riser Turret Mooring (RTM), North West Cape on 18 January, please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Yindjibarndi Aboriginal Corporation (YAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that YAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for YAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

YAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to YAC members as required. Woodside would be pleased to speak with YAC members in addition to the YAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]

1.118 Email sent to Chevron Australia and Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon via Chevron Australia − 27 January 2023

Dear [redacted] and [redacted]

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

We would be grateful if you could please forward this consultation information to your Joint Venture participants Osaka Gas Gorgon, Tokyo Gas Gorgon and JERA Gorgon for feedback.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

		locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	Exmouth, Western Australia.	
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads.

	The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.119 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) − 20 January 2023

Good afternoon [redacted]

Further to our recent communications, I attach information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Robe River Kuruma Aboriginal Corporation (RRKAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that RRKAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for RRKAC's review:

4. A Summary Overview of the Scarborough project; and
5. Respective Summary Information sheets

RRKAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to RRKAC members as required. Woodside would be pleased to speak with RRKAC members in addition to the RRKAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]

1.120 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) − 20 January 2023

Good afternoon [redacted]

I hope this email finds you well. I note your recent communications with [redacted] and attach information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Buurabalayji Thalanyji Aboriginal Corporation (BTAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that BTAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for BTAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

BTAC can also provide feedback directly to [redacted] on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to BTAC members as required. Woodside would be pleased to speak with BTAC members in addition to the BTAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted] on behalf of [redacted]
Consultant to First Nations & Communities | Corporate Affairs

1.121 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) − 23 January 2023

Dear [redacted]

I hope this message finds you well.

[redacted] mentioned that I sent the below email to the wrong email address. I am sorry about this.

As always, please don't hesitate to contact me if you have any questions. I'll also reach out this week by phone.

Sincerely
[redacted]

1.122 Email sent to Australian Border Force (ABF), Director of National Parks (DNP), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Department of Transport (DoT), Department of Biosecurity, Conservation and Attractions (DBCA), Department of Industry, Science and Resources (DISR), Department of Mines, Industry Regulation and Safety (DMIRS), Australian Petroleum Production and Exploration Association (APPEA) − 27 January 2023

Dear Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters	Drilling and Completions activities in Commonwealth waters, including	4D baseline seismic survey over the Scarborough and Jupiter fields. The	Seabed site surveys and installation of subsea production infrastructure.

	associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities

Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Woodside Feedback

1.123 Email sent to Australian Hydrographic Office (AHO) and Australian Maritime Safety Authority (AMSA) – Marine Safety − 27 January 2023

Dear AHO and AMSA

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

Woodside will make available a shipping lane figure as soon as possible.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management

measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU.

	(Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	• Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Woodside Feedback

1.124 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) − 3 February 2023

Dear Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Department of Agriculture, Fisheries and Forestry (DAFF)

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

Woodside advises there are a number of historical shipwrecks which have been recorded within the EMBA for the proposed activities. Please find a list relevant to each EP attached. **Also attached are Commonwealth fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Please note this consultation information is of relevance to both DCCEEW and DAFF.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU).

	Commonwealth waters. A separate EP covers activities in State waters.			Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of

	to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)		Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	supply/support vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

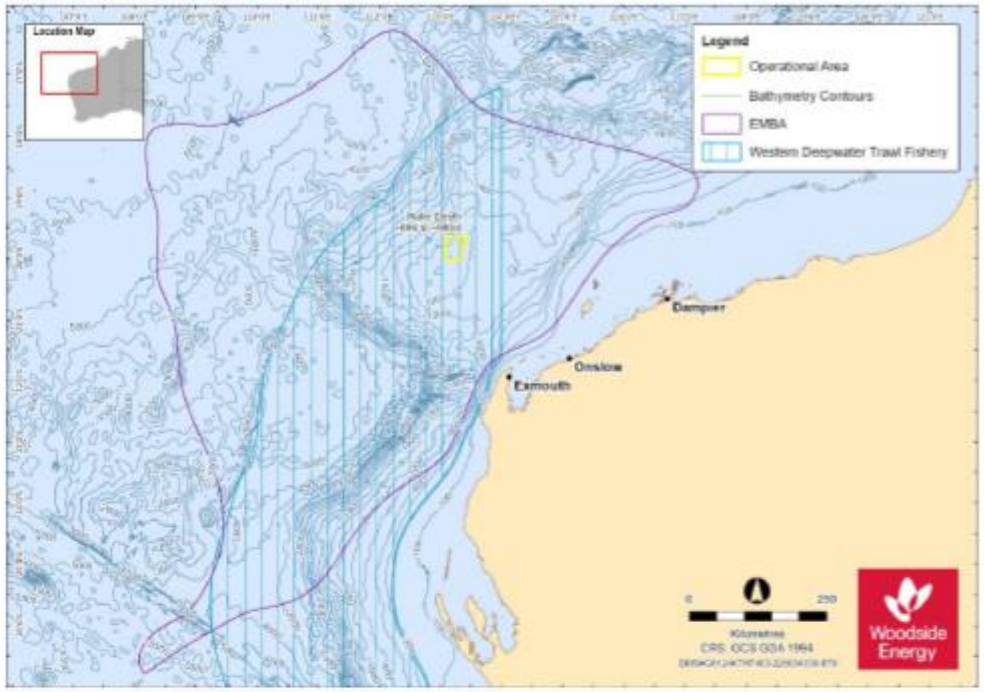
Regards,

APPENDIX A

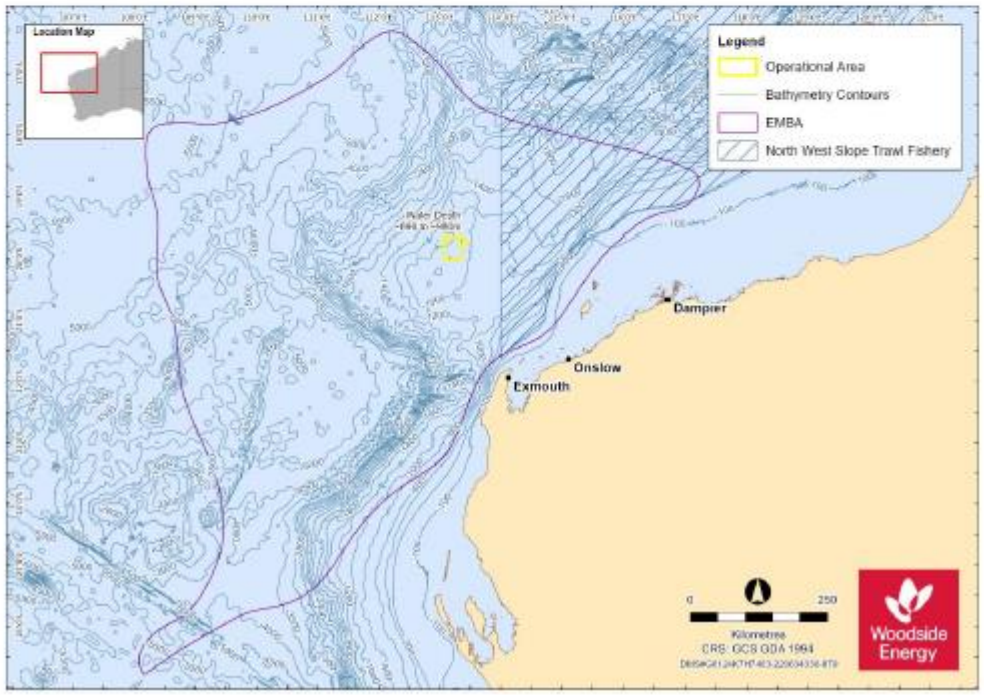
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Subsea Infrastructure Installation EP (Subsea EP)

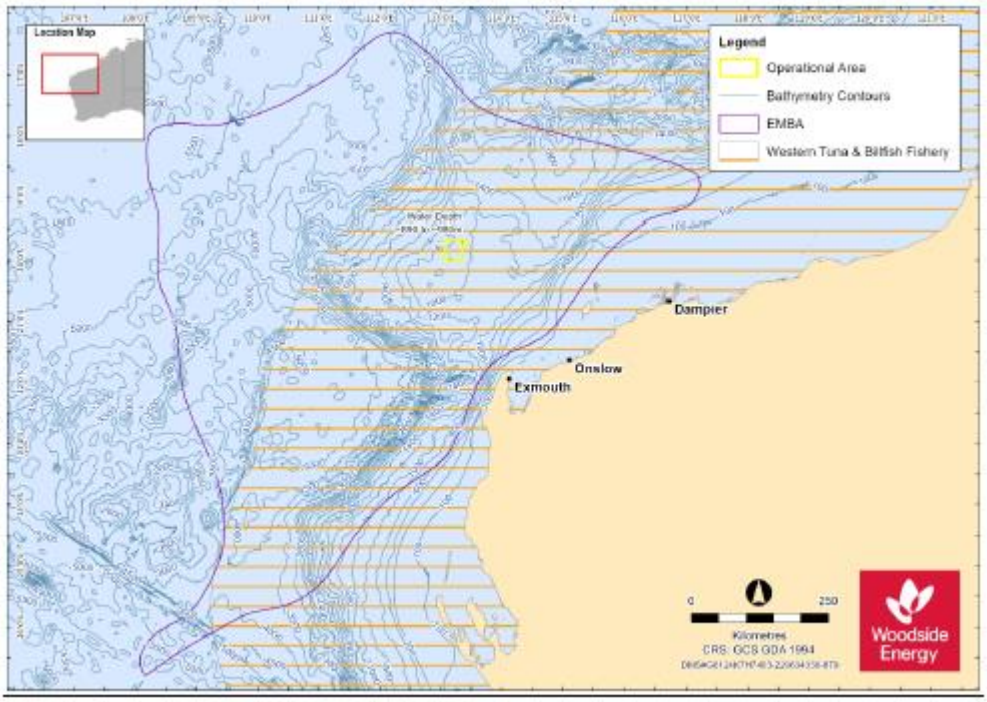
North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



Western Tuna and Billfish Fishery



WA-61-L and WA-62-L Subsea Infrastructure Installation EP (Subsea EP)

Vessel name	Year wrecked	Wreck location	Latitude	Longitude
Vianen	1628	Barrow Island Area	-20	115.1666667
Wild Wave (China)	1873	Monte Bello Island	-20	115.1666667
Kadna	1902	TBC	-17.96166667	112.2363833
Marietta	1905	Barrow Island	-20	115.1666667
Lady Ann	1982	24 miles north of NW Cape	-21.4	114.2
Abandoned Fishing Vessel	2006	North West of Barrow Island	-18.01666667	109.1
Tanami	*not provided*	Trial Rocks	-20.28333	115.36666
Trial	1622	Trial Rocks	-20.28598333	115.3752333
Curlew	1911	At Onslow, Monte Bellos Group	-20	115.1666667

1.125 Email sent to Department of Defence (DoD) (27 January 2023)

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**); and
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**).

Woodside is also planning to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

Woodside is also seeking access to sufficient data or a map of Defence Restricted and Prohibited Areas to inform Woodside's development of defence zone maps and figures for DoD's use.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU)	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow

	to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.

Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels

	• Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels		• Support vessels

Feedback:

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Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.126 Email sent to Recfishwest, Marine Tourism WA and WA Game Fishing Association (27 January 2023)

Dear Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

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Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**

Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
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	availability and weather constraints.			
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
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				throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.127 Email sent to Western Gas, Exxon Mobil Australia Resources Company, Shell Australia, Finder Energy, KUFPEC, Santos, OMV Australia / Sapura OMV Upstream (WA), (27 January 2023)

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
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- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to

	either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	around subsea locations	• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.128 Email sent to BP Developments Australia, Carnarvon Energy, PE Wheatstone, Kyushu Electric Wheatstone, Eni Australia Ltd, Fugro Exploration, JX Nippon O&G Expln (Australia) (27 January 2023)

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of

activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

	Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.		
Estimated duration:	~24 months across multiple campaigns	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities

Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**Seismic EP**	**Subsea EP**

1.129 Email sent to Karratha Community Liaison Group (27 January 2023)

Dear Karratha Community Liaison Group

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to

	either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	around subsea locations	• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.130 Email sent to Wirrawandi Aboriginal Corporation (WAC) (27 January 2023)

Hello [redacted]

It was great to connect by phone this morning. I am looking forward to meeting in person in the very near future. I understand from our discussion that your priority at the moment is to prepare for the upcoming Board meeting on the 20 h February.

Thank you so much for enabling an opportunity to meet with me on the 21st February whilst you are in Karratha. I will send a separate meeting request with a proposed time for us to have a general catch up on the information we have sent to date on the RTM and Scarborough EMBA's.

It will be great to gain an understanding from you on best way to progress if the Board wish to have further discussions in relation to this information and also on how they may prefer us to engage for any future information shares.

If you have any questions in the meantime please don't hesitate to reach out on the contact details in my signature below.

Kind regards

[redacted]

[redacted]

Principal Adviser First Nations Relations, Corporate Australian Operations

1.131 Email sent to Nanda Aboriginal Corporation via Yamatji Marlpa Aboriginal Corporation (YMAC) − 1 February 2023

Good afternoon [redacted]

I wanted to follow up on the below email and confirm you are the correct contact for the Nanda Aboriginal Corporation (NAC) at YMAC.

I would like to be able to speak with the relevant representative for NAC to ensure that NAC are receiving the relevant information and seek an understanding of whether they would like to discuss any of the information in more detail.

In relation to the Scarborough project, I again attach the Summary Overview sheet. Woodside is specifically seeking to understand the nature of the interests that NAC and its members may have in the 'environment that may be affected' (EMBA) by this activities outlined in the two Summary Information Sheets for Scarborough Seabed Intervention and Trunkline Installation and Scarborough Subsea Infrastructure Installation.

1. A Summary Overview of the Scarborough project;
2. Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation
3. Summary Information Sheet – Scarborough Subsea Infrastructure Installation

Please don't hesitate to reach out in response to the email or by contacting me on my mobile in the signature below.

Kind regards

[redacted]

1.133 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) − 27 January 2023

Hi [redacted]

I hope your week is travelling nicely.

I left a message this morning, just to reach out to see if you require any further information about Scarborough or the RTM at this point, or whether you need anything from Woodside to assist with BTAC's consideration.

As always, please call / email if you need anything. I would also be more than happy to meet up if you would like, to brief you on these matters and to plan together how Woodside should best approach consultation.

Have a great weekend.

[redacted]

1.134 Email sent to Malgana Aboriginal Corporation − 1 February 2023

Good afternoon [redacted] and [redacted]

I wanted to follow up on the below email.

I would like to be able to speak with one or both of you to ensure that you have been receiving my emails, to chat through the attached information and seek an understanding of whether on behalf of the Malgana Aboriginal Corporation (RNTBC) you would like to discuss any of the information in more detail. In relation to the Scarborough project I again attach the Summary Overview sheet. Woodside is specifically seeking to understand the nature of the interests that Malgana Aboriginal Corporation (MAC) and its members may have in the

'environment that may be affected' (EMBA) by this activities outlined in the two Summary Information Sheets for Scarborough Seabed Intervention and Trunkline Installation and Scarborough Subsea Infrastructure Installation.

1. A Summary Overview of the Scarborough project;
2. Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation
3. Summary Information Sheet – Scarborough Subsea Infrastructure Installation

Please don't hesitate to reach out in response to the email or by contacting me on my mobile in the signature below.

Kind regards

[redacted]
Manager First Nations Relations | Corporate Affairs

1.135 Email sent to Exmouth CRG −1 February 2023

Dear Exmouth Community Reference Group

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **3 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

	northern extent of the Dampier Archipelago.	Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	Exmouth, Western Australia.	
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the	A petroleum safety zone of 500 m will be in place around the MODU and installation	• Three nautical mile radius safe navigation area around the seismic vessel, streamers	The Operational Area for activities includes a radius of: • 1,000 m around location of the

	Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **3 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.136 Email sent to Department of Planning, Lands and Heritage (DPLH) (1 February 2023)

Dear Department of Planning, Lands and Heritage (DPLH)

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

Woodside advises there are a number of historical shipwrecks which have been recorded within the 'environment that may be affected' (EMBA) for the proposed activities. Please find a list relevant to each EP attached.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022

(https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside is preparing to submit a further revision of the SITI EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in this revision remains the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **3 March 2023**.

Activity:

	SITI EP	**Subsea EP**
Summary:	Seabed intervention and trunkline nstallation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU n WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary s~32 km north-west of Dampier.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.

Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed ntervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental

Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **3 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**Subsea EP**

1.137 Email sent to Western Australian Museum (1 February 2023)

Dear Western Australian Museum

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

Woodside advises there are a number of historical shipwrecks which have been recorded within the 'environment that may be affected' (EMBA) for the proposed activities. Please find a list relevant to each EP attached.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside is preparing to submit a further revision of the SITI EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in this revision remains the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management

measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **3 March 2023**.

Activity:

	SITI EP	**Subsea EP**
Summary:	Seabed intervention and trunkline nstallation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU n WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary s~32 km north-west of Dampier.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)

Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed ntervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **3 March 2023**.

Regards,

APPENDIX A

FEEDBACK	SITI EP	Subsea EP

1.138 State Shipwrecks information sent to DPLH, Western Australian Museum (1 February 2023)

Scarborough Seabed Intervention and Trunkline Installation (SITI)

Vessel name	Year wrecked	Wreck location	Latitude	Longitude
Benan	1886/12/23	Point Cloates	113.6733333	-22.74266667
Perth SS	1887/09/17	Point Cloates	113.6403333	-22.69416667
Rapid	1811/01/07	Ningaloo Reef	113.6833333	-22.73333333
Stefano	1875/10/27	Point Cloates	113.7195	-22.82883333
Trial	1622/05/24	Trial Rocks	115.3736667	-20.28716667
Zvir SS	27/11/1902	Point Cloates	113.626	-22.60916667
Mildura SS	12/03/1907	North-West Cape	114.1666667	-21.78566667
Fin SS	15/02/1923	Point Cloates, Fraser Island	113.6268333	-22.64883333
Lady Ann	18/09/1982	24 miles north of NW Cape	114.2	-21.4

WA-61-L and WA-62-L Subsea Infrastructure Installation EP (Subsea EP)

Vessel name	Year wrecked	Wreck location	Latitude	Longitude
Trial	1622/05/24	Trial Rocks	115.3736667	-20.28716667
Lady Ann	18/09/1982	24 miles north of NW Cape	114.2	-21.4

1.139 Email sent to Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA) and Tuna Australia, North West Slope and Trawl Fishery (4 Licence Holders), Western Deepwater Trawl Fishery (5 Licence Holders) (3 February 2023)

Dear Fishery Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);

- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Consultation Information Sheets are attached, which provide background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are Commonwealth fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene,	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure,

	Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.

Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels

	• Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels		• Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

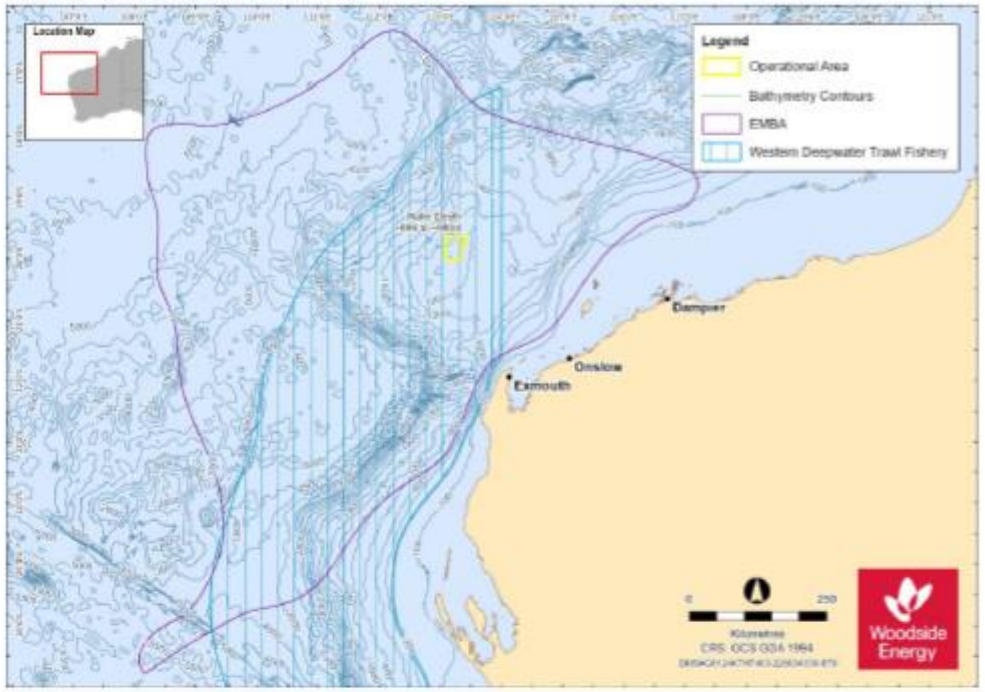
Regards,

APPENDIX A

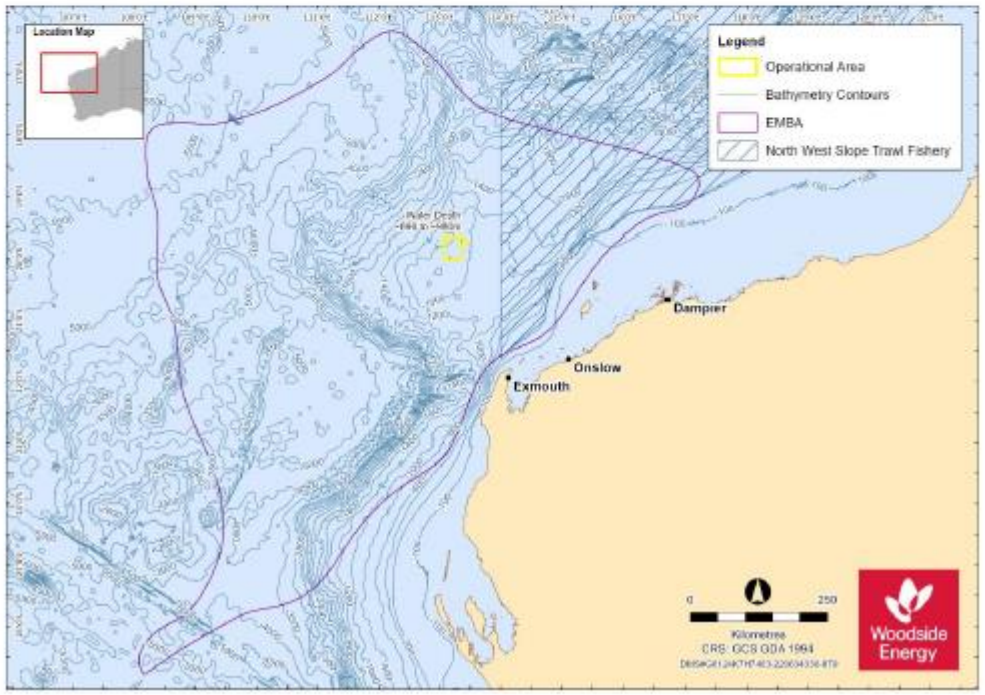
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Subsea Infrastructure Installation EP (Subsea EP)

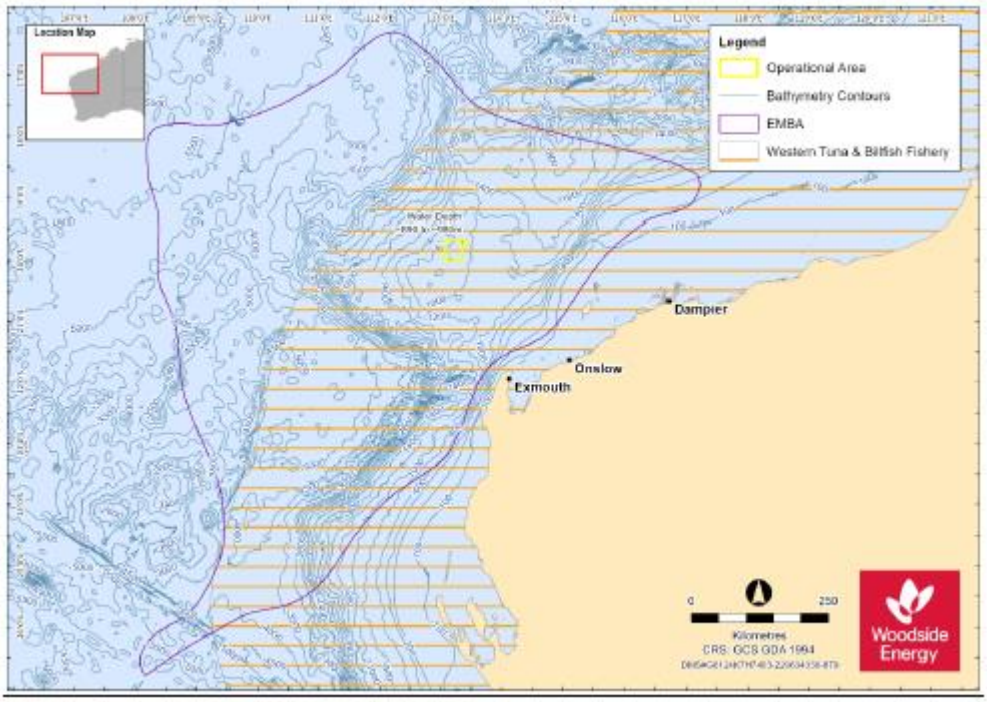
North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



Western Tuna and Billfish Fishery



1.140 Email sent to Western Tuna and Billfish Fishery (3 Licence Holders) (3 February 2023)

Dear Fishery Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. Also attached are Commonwealth fishery figures.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside is preparing to submit a further revision of the SITI EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in this revision remains the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**Subsea EP**
Summary:	Seabed intervention and trunkline nstallation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU n WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary s~32 km north-west of Dampier.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth)

	• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed ntervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

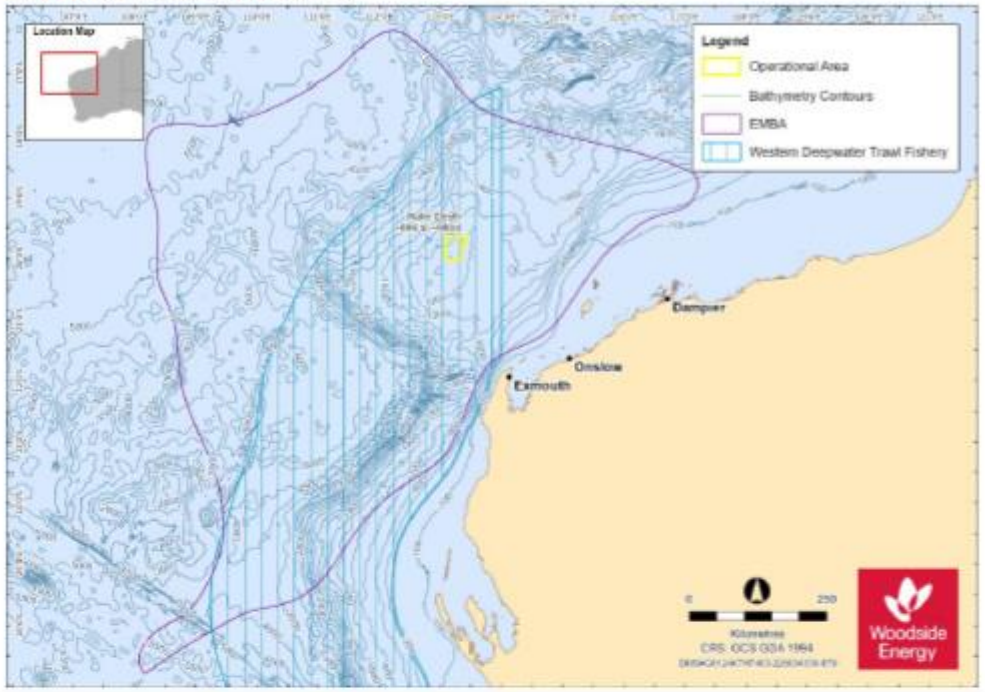
Regards,

APPENDIX A

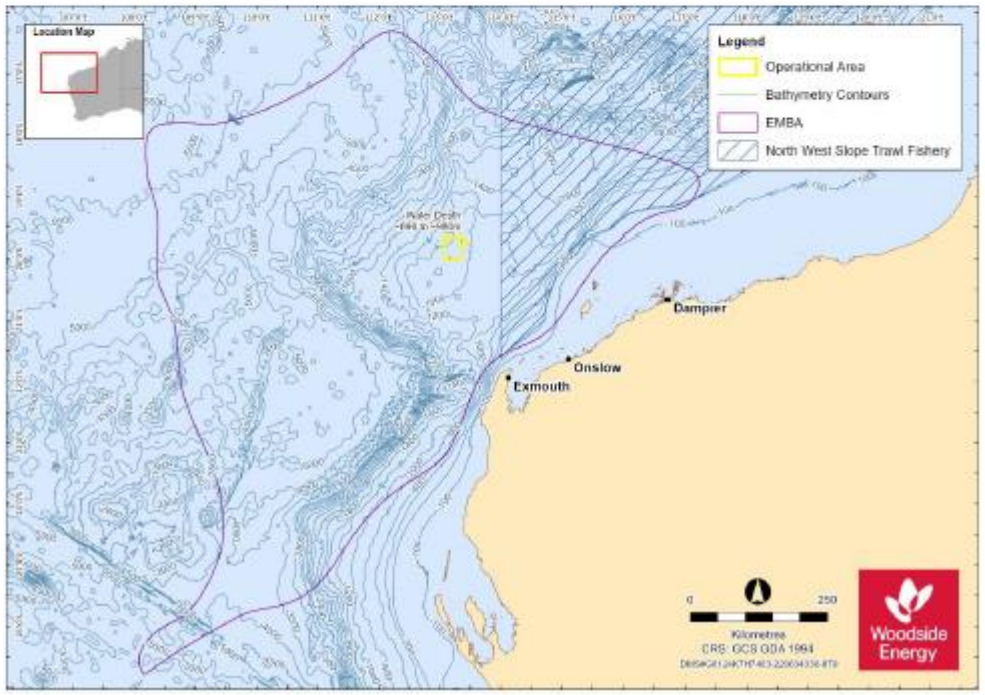
FEEDBACK	**SITI EP**	**Subsea EP**

Subsea Infrastructure Installation EP (Subsea EP)

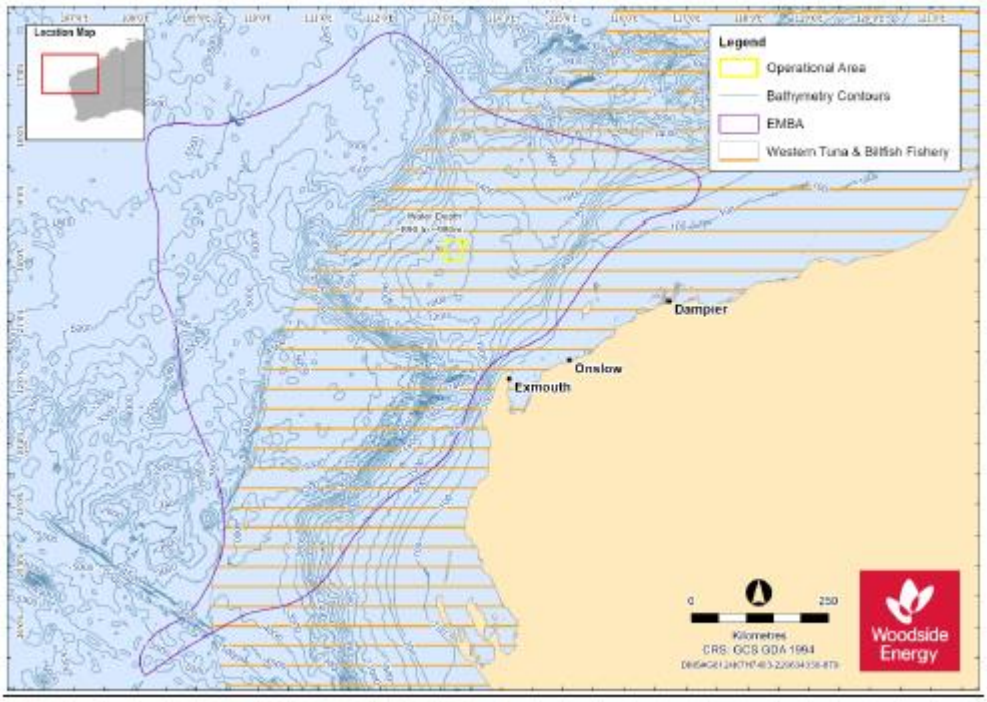
North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



Western Tuna and Billfish Fishery



1.141 Email sent to Pilbara Trawl Fishery (6 Licence Holders) and Pilbara Trap Fishery (6 Licence Holders) (3 February 2023)

Dear Fishery Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. Also attached are State fishery figures.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside is preparing to submit a further revision of the SITI EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in this revision remains the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**Subsea EP**
Summary:	Seabed intervention and trunkline nstallation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU n WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary s~32 km north-west of Dampier.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth)

	• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed ntervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

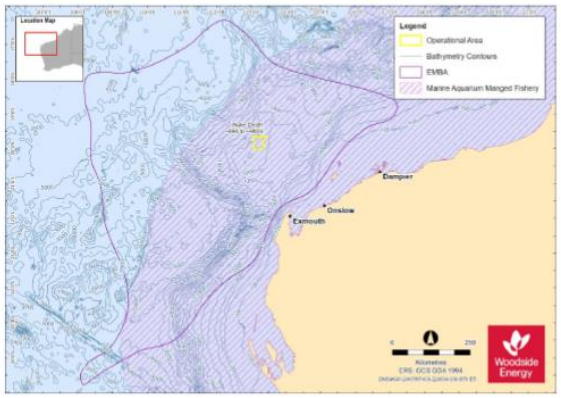
Regards,

APPENDIX A

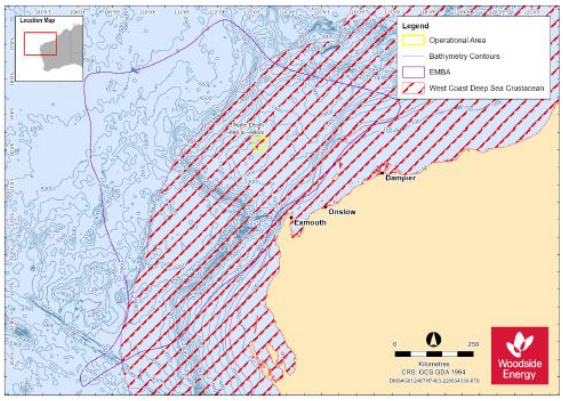
FEEDBACK	**SITI EP**	**Subsea EP**

Subsea Infrastructure Installation EP (Subsea EP)

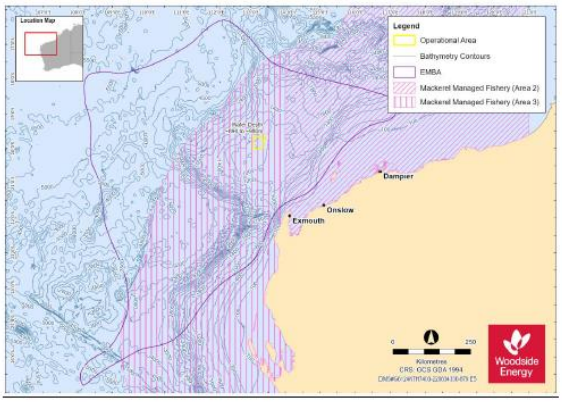
Marine Aquarium Managed Fishery



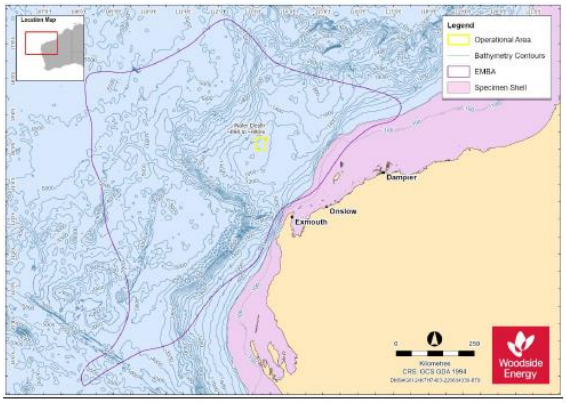
West Coast Deep Sea Crustacean Managed Fishery



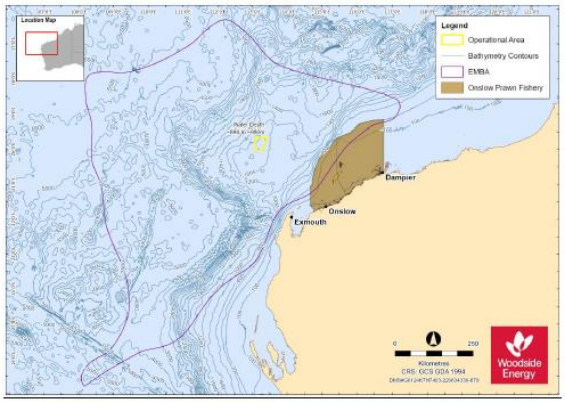
Mackerel Managed Fishery (Area 2 and 3)



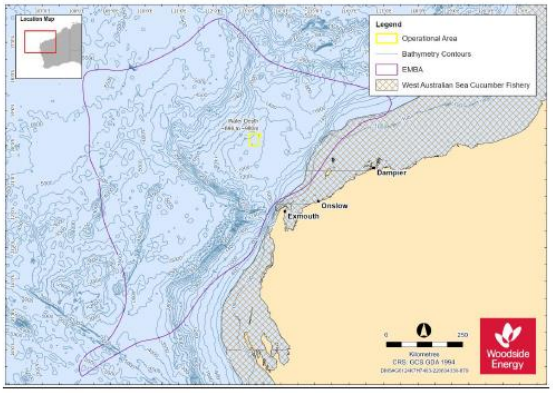
Specimen Shell Managed Fishery



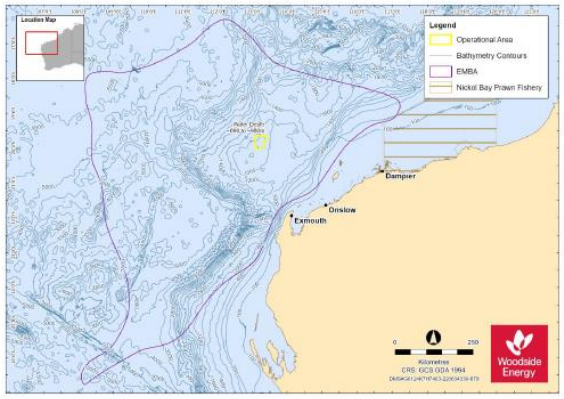
Onslow Prawn Managed Fishery



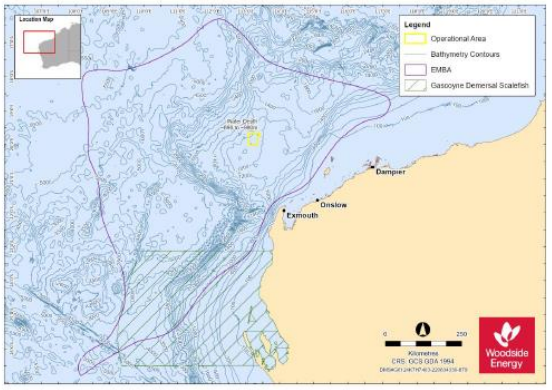
Western Australian Sea Cucumber Managed Fishery



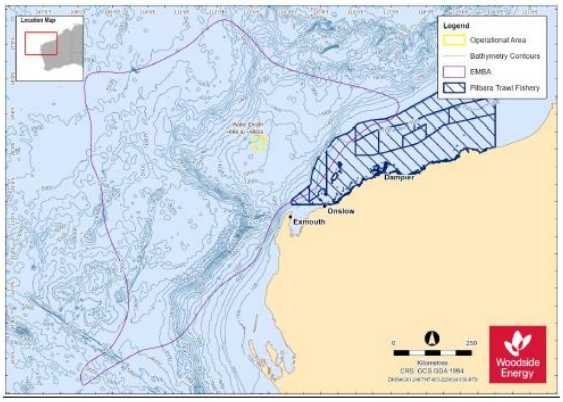
Nickol Bay Prawn Managed Fishery



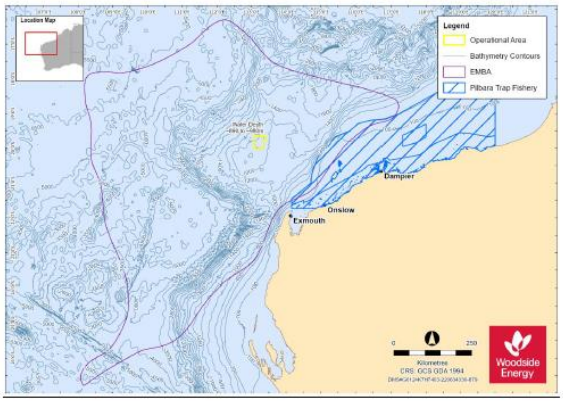
Gascoyne Demersal Scalefish Fishery



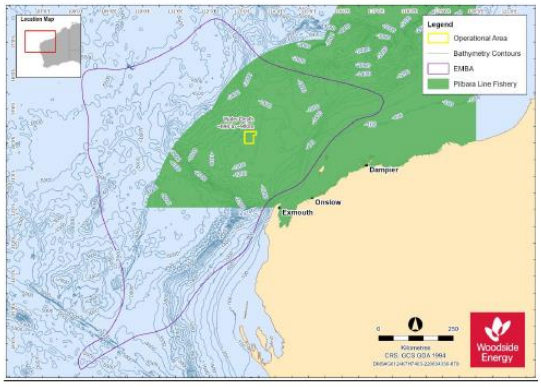
Pilbara Trawl Fishery



Pilbara Trap Fishery



Pilbara Line Fishery



1.142 Letter sent to Marine Aquarium Managed Fishery (12 Licence Holders), Mackerel Managed Fishery (Area 2 and 3) (43 Licence Holders), West Coast Deep Sea Crustacean Managed Fishery (7 Licence Holders) (3 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

3 February 2023

Dear Fishery Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities

Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

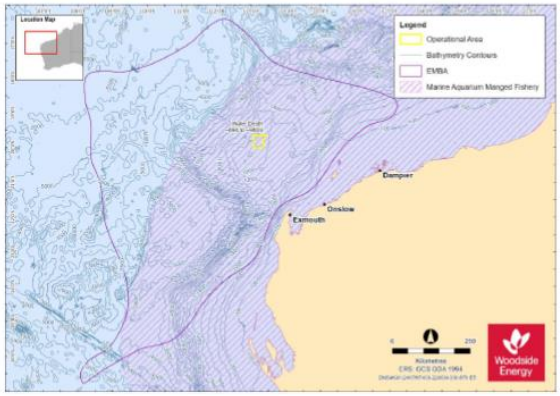
APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

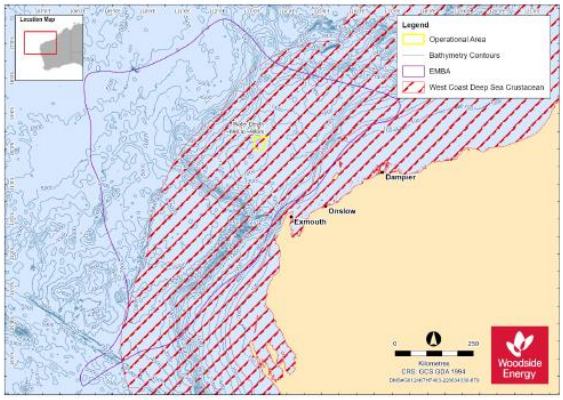
Attached: Consultation Information Sheets for the SITI EP, D&C EP, Seismic EP and Subsea EP, Fishery figures

Subsea Infrastructure Installation EP (Subsea EP)

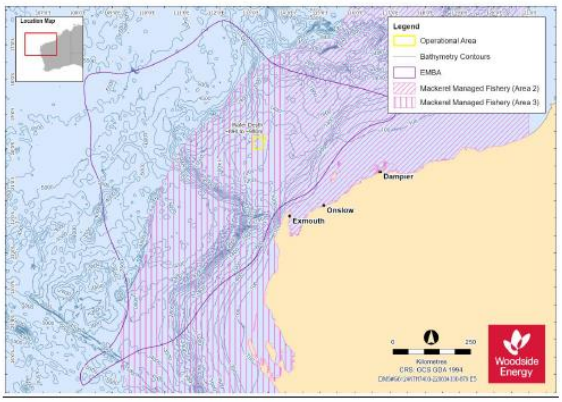
Marine Aquarium Managed Fishery



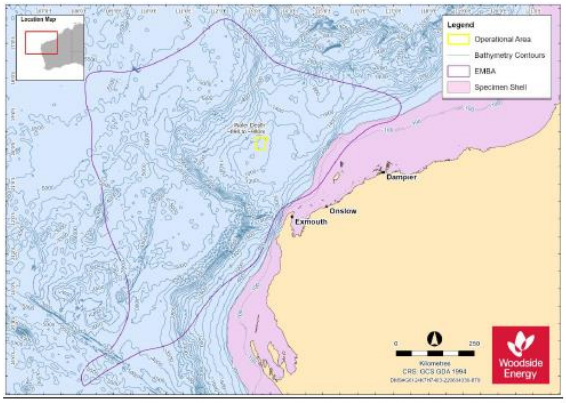
West Coast Deep Sea Crustacean Managed Fishery



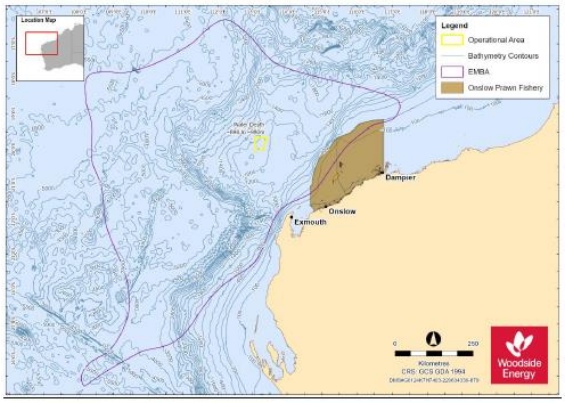
Mackerel Managed Fishery (Area 2 and 3)



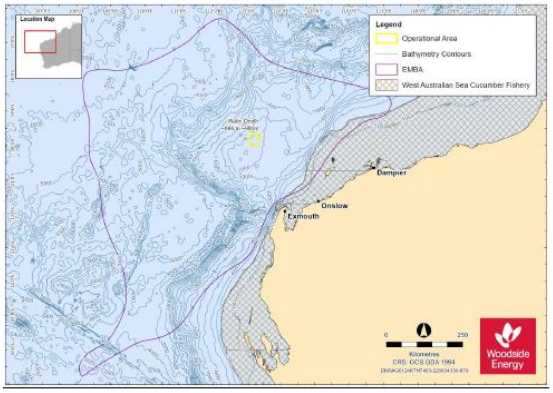
Specimen Shell Managed Fishery



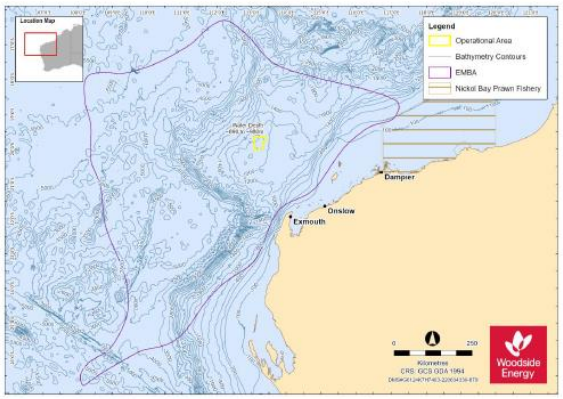
Onslow Prawn Managed Fishery



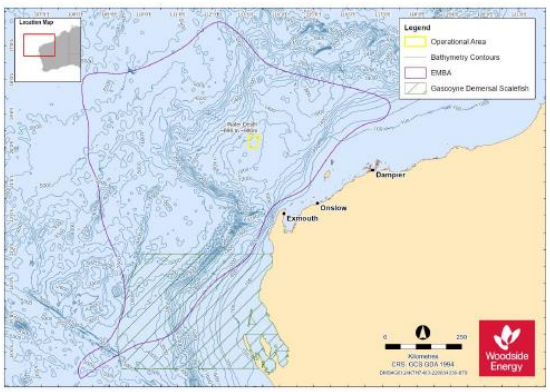
Western Australian Sea Cucumber Managed Fishery



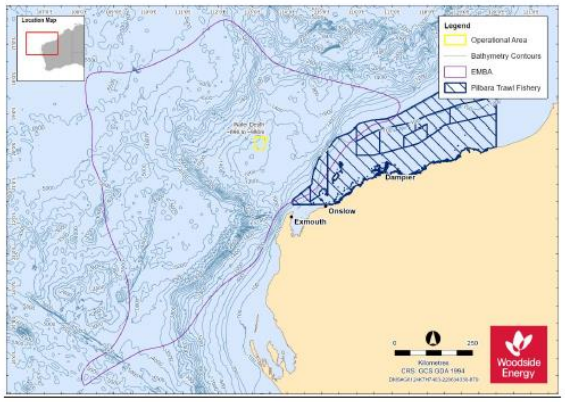
Nickol Bay Prawn Managed Fishery



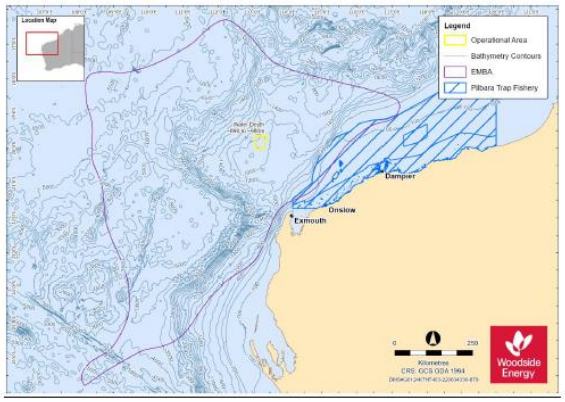
Gascoyne Demersal Scalefish Fishery



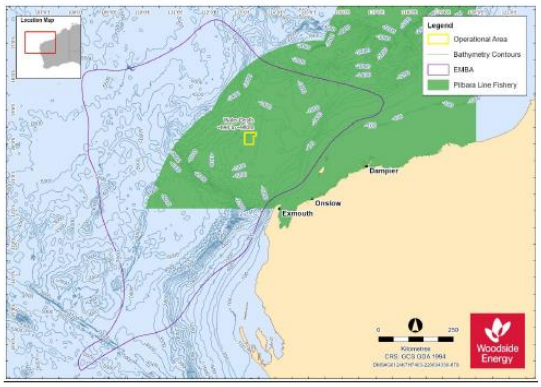
Pilbara Trawl Fishery



Pilbara Trap Fishery



Pilbara Line Fishery



1.143 Email sent to Department of Primary Industries and Regional Development (DPIRD) (3 February 2023)

Dear [redacted]

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will

	covers activities in State waters.			also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth)

	• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	Ningaloo Marine Park (Cwlth)		• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels			

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

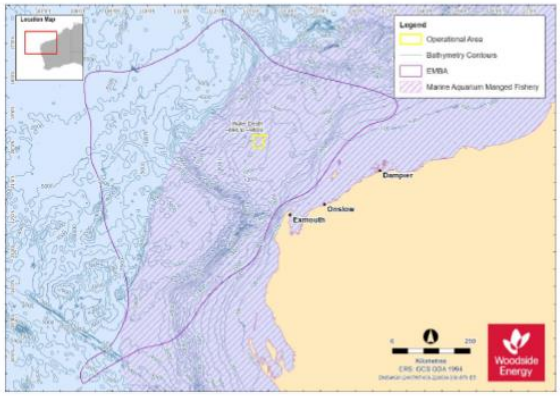
Regards,

APPENDIX A

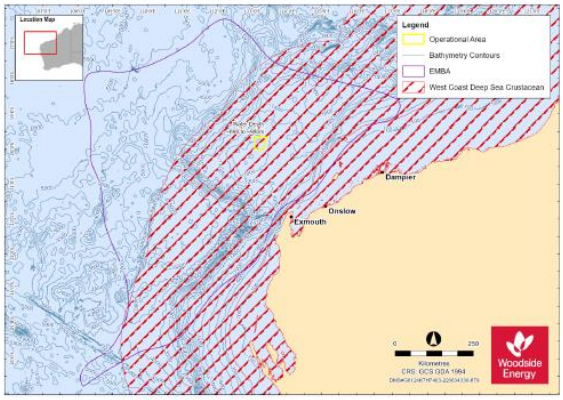
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Subsea Infrastructure Installation EP (Subsea EP)

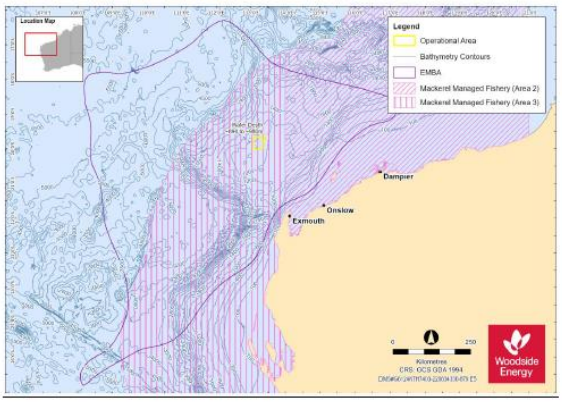
Marine Aquarium Managed Fishery



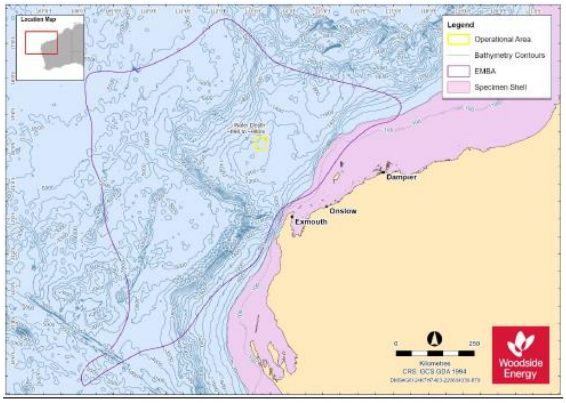
West Coast Deep Sea Crustacean Managed Fishery



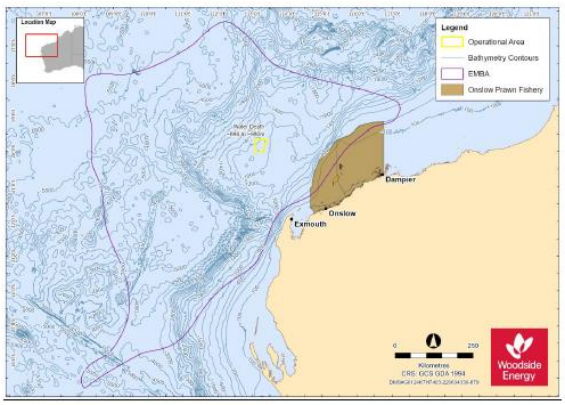
Mackerel Managed Fishery (Area 2 and 3)



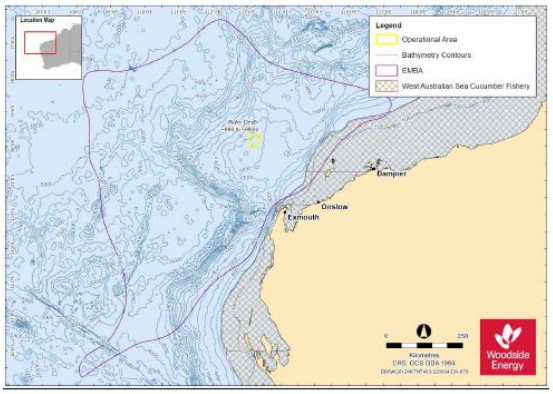
Specimen Shell Managed Fishery



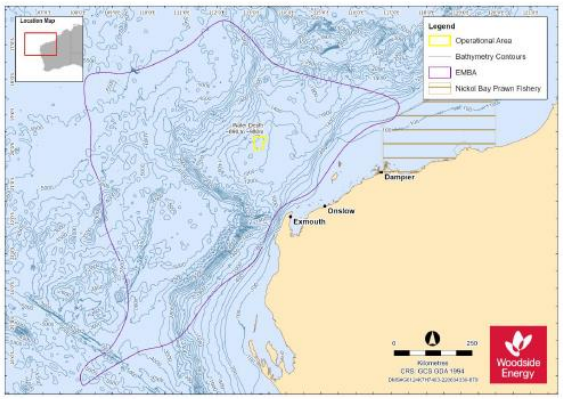
Onslow Prawn Managed Fishery



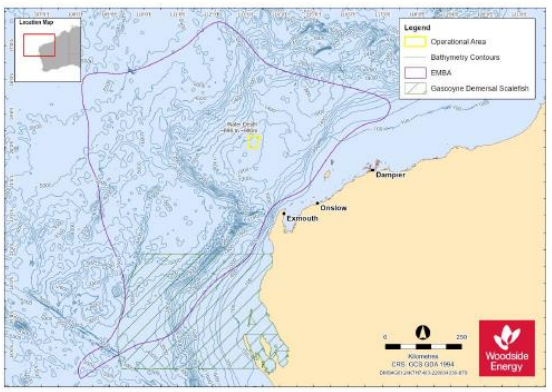
Western Australian Sea Cucumber Managed Fishery



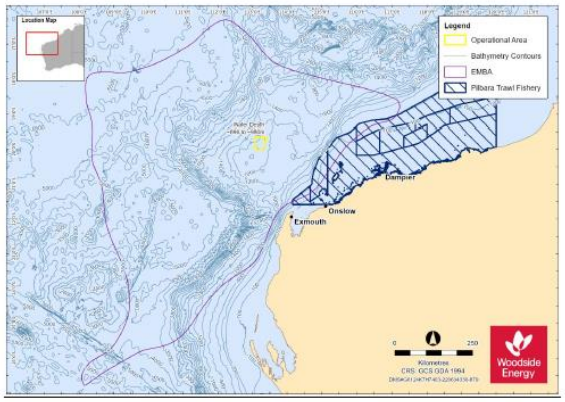
Nickol Bay Prawn Managed Fishery



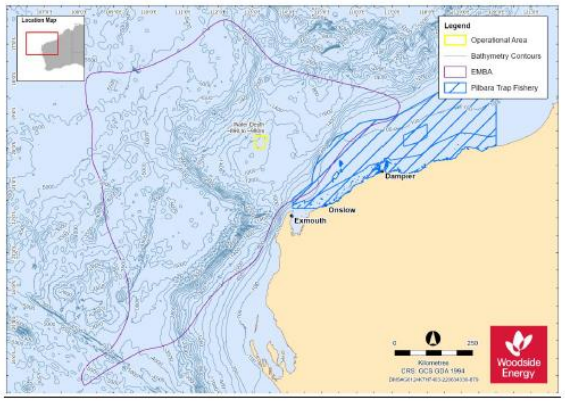
Gascoyne Demersal Scalefish Fishery



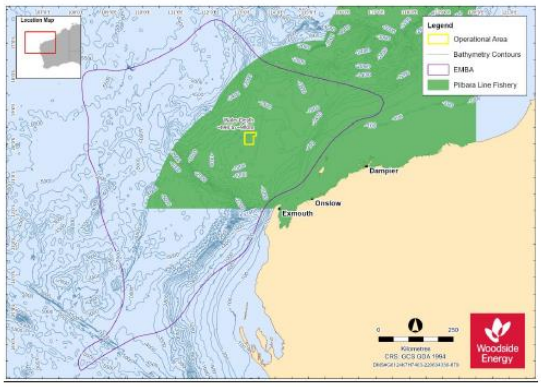
Pilbara Trawl Fishery



Pilbara Trap Fishery



Pilbara Line Fishery



1.144 Email sent to Western Australian Fishing Industry Council (WAFIC) (3 February 2023)

Dear [redacted]

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
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- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
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Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are State fishery figures.**

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More information on the Scarborough Project can be found here.

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Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry

				survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of

	the north of the Dampier Marine Park Habitat Protection Zone			Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels			

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

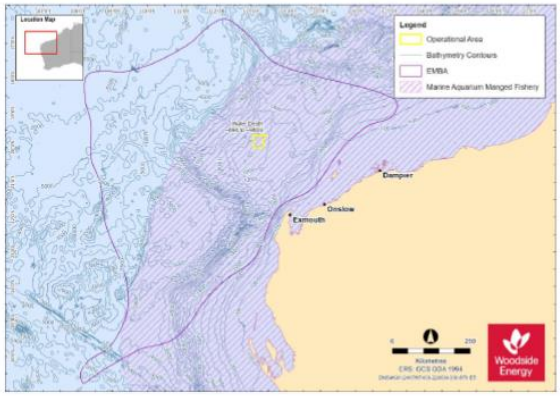
Regards,

APPENDIX A

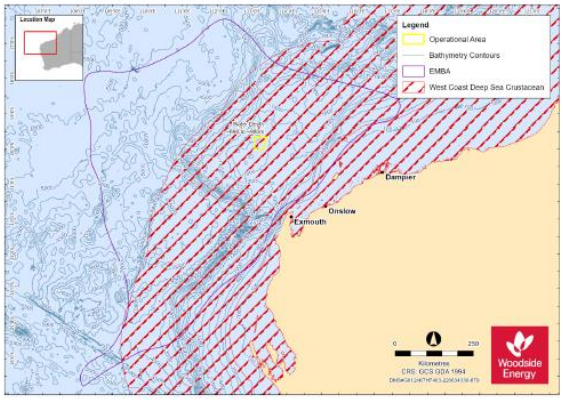
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Subsea Infrastructure Installation EP (Subsea EP)

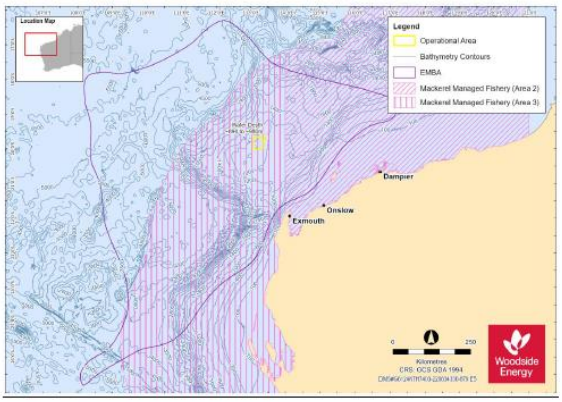
Marine Aquarium Managed Fishery



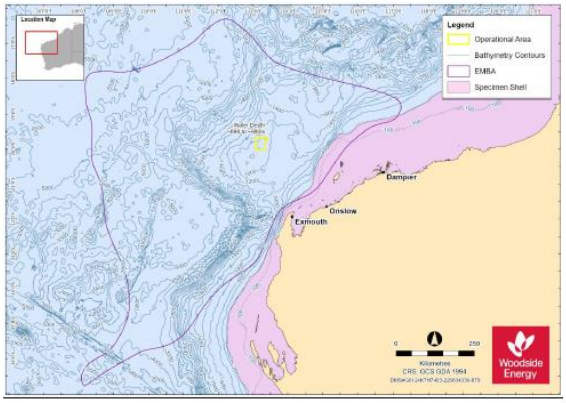
West Coast Deep Sea Crustacean Managed Fishery



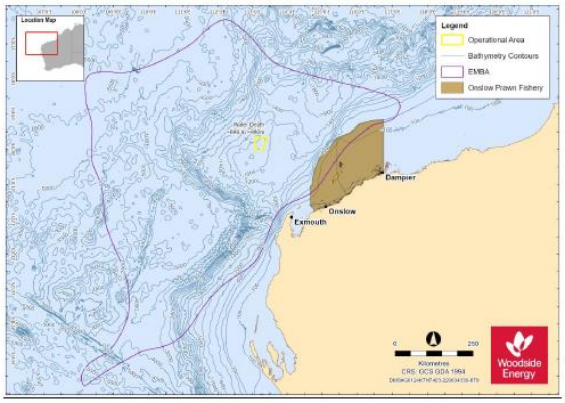
Mackerel Managed Fishery (Area 2 and 3)



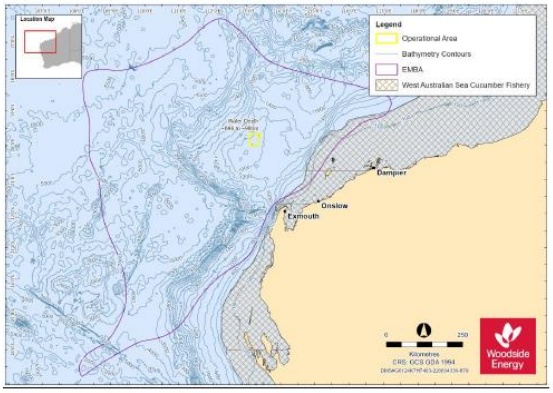
Specimen Shell Managed Fishery



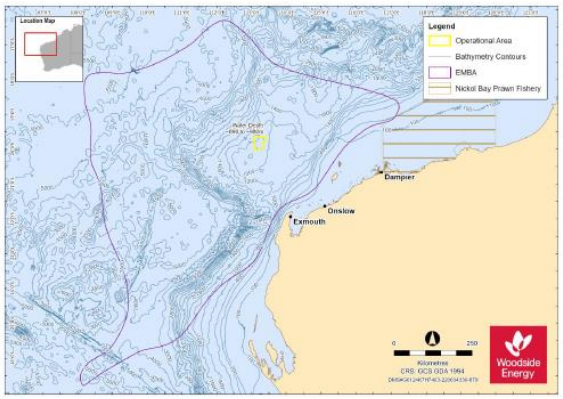
Onslow Prawn Managed Fishery



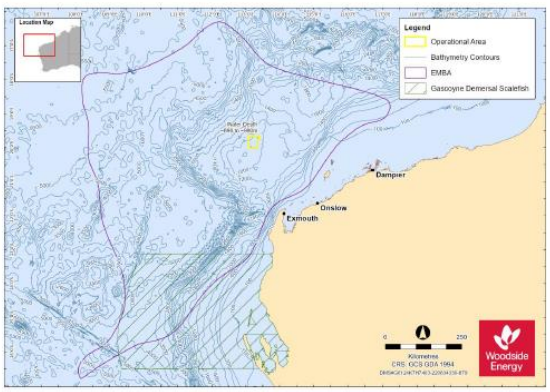
Western Australian Sea Cucumber Managed Fishery



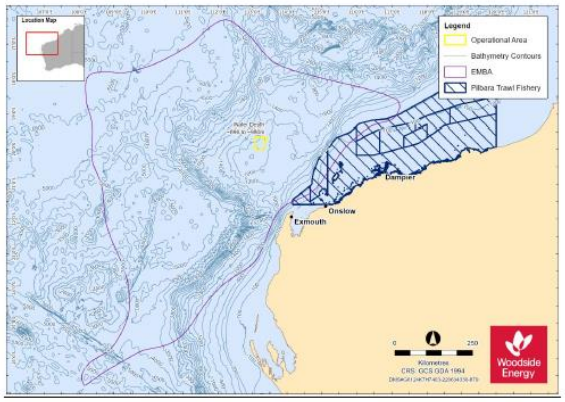
Nickol Bay Prawn Managed Fishery



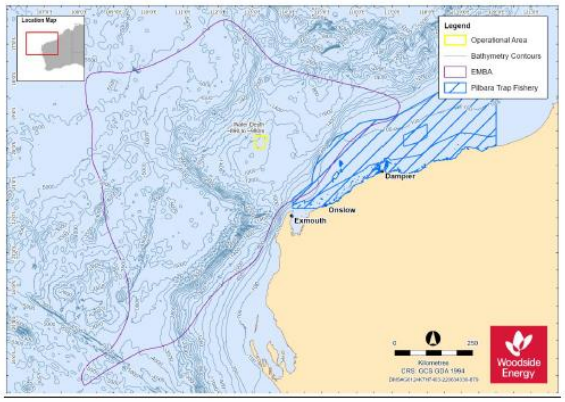
Gascoyne Demersal Scalefish Fishery



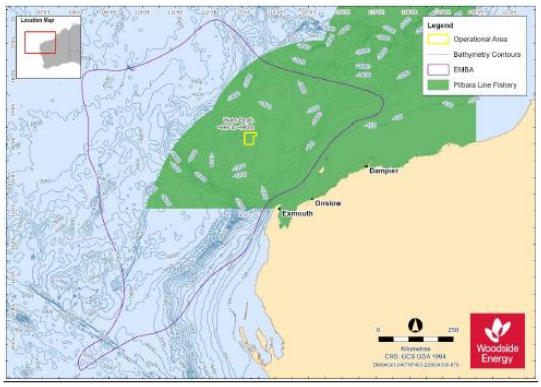
Pilbara Trawl Fishery



Pilbara Trap Fishery



Pilbara Line Fishery



1.145 Email sent to Karratha Recreational Marine Users (9 Licence Holders) (3 February 2023)

Dear Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside is preparing to submit a further revision of the SITI EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in this revision remains the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**Subsea EP**
Summary:	Seabed intervention and trunkline nstallation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU n WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary s~32 km north-west of Dampier.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth)

	• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed ntervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**Subsea EP**

1.146 Email sent to Exmouth Recreational Marine Users (50 Licence Holders) (3 February 2023)

Dear Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.

	northern extent of the Dampier Archipelago.	Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	north west of Exmouth, Western Australia.	
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the	A petroleum safety zone of 500 m will be in place around the MODU and installation	• Three nautical mile radius safe navigation area around the seismic vessel, streamers	The Operational Area for activities includes a radius of: • 1,000 m around location of the

	Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.147 Email sent to Western Australian Marine Science Institution (WAMSI) (3 February 2023)

Dear [redacted]

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

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Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

Woodside is seeking your advice regarding any research activities that WAMSI may be undertaking that may overlap with our proposed activities.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough

	Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	repair activities may also be undertaken.	technically termed 4D baseline survey).	Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use	• ~83 km north of the Gascoyne Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth)

	Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)		• ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:**	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	supply/support vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,
Woodside Feedback

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.148 Email sent to Australian Fisheries Management Authority (AFMA) - 3 February 2023

Dear AFMA

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. Also attached are Commonwealth fishery figures.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in	Drilling and Completions activities in Commonwealth	4D baseline seismic survey over the Scarborough and	Seabed site surveys and installation of subsea production

	Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities

Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

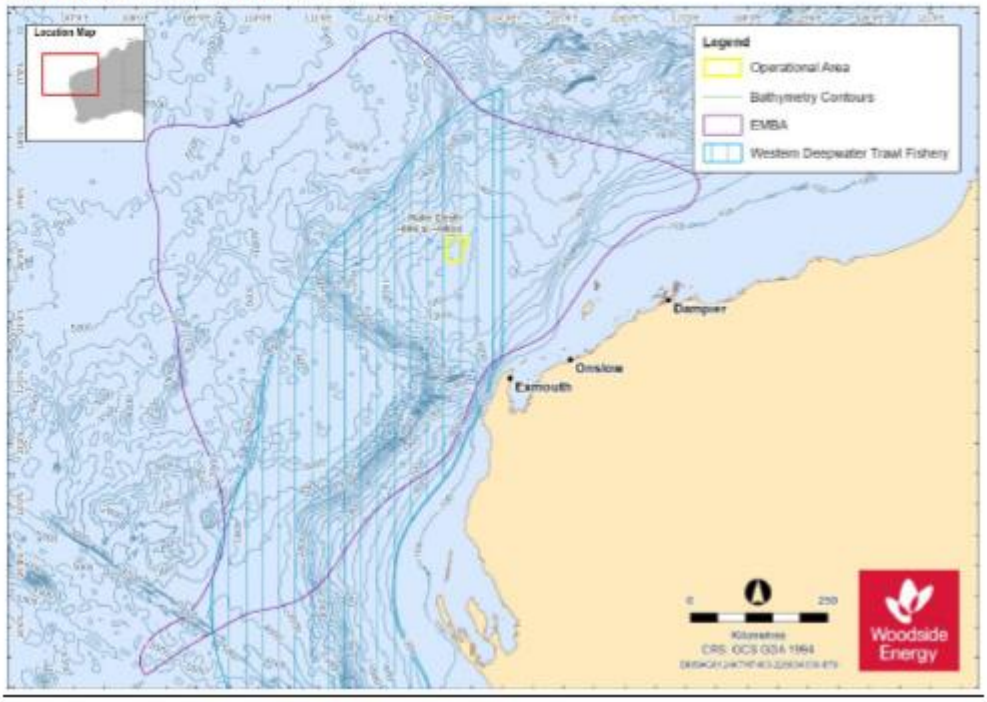
APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

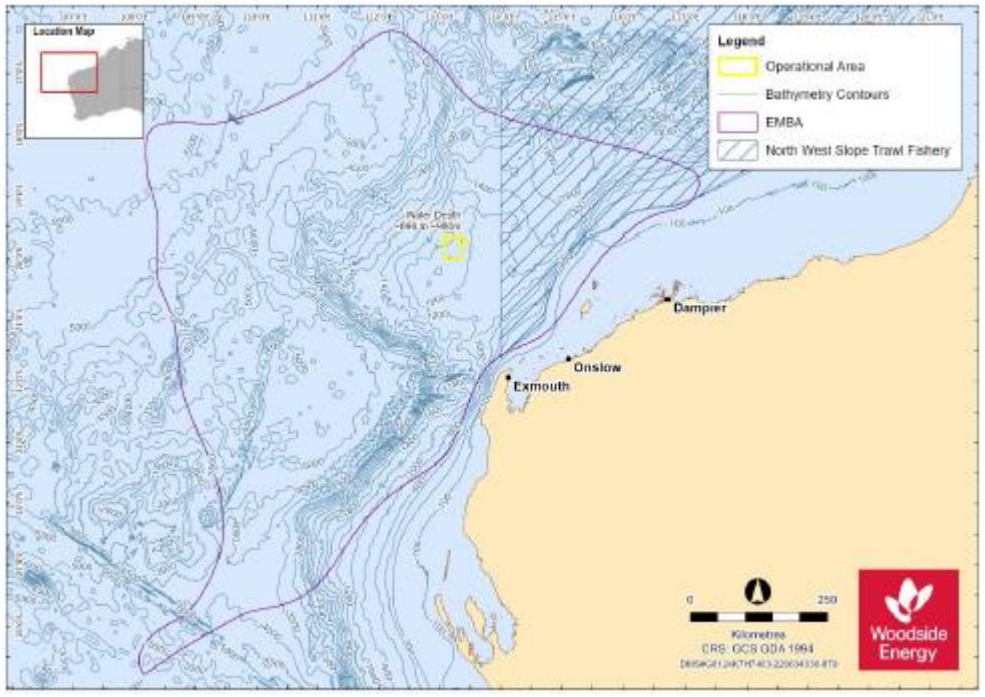
Woodside Feedback

Subsea Infrastructure Installation EP (Subsea EP)

North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



1.149 Email sent to Pilbara Line Fishery (8 Licence Holders) (3 February 2023)

Dear Fishery Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:**	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

	Q4 2023 pending successful completion approvals, vessel availability and weather constraints.			
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
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	Commonwealth waters.			on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

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Feedback@woodside.com.au or 1800 442 977.

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Please provide your views by **5 March 2023**.

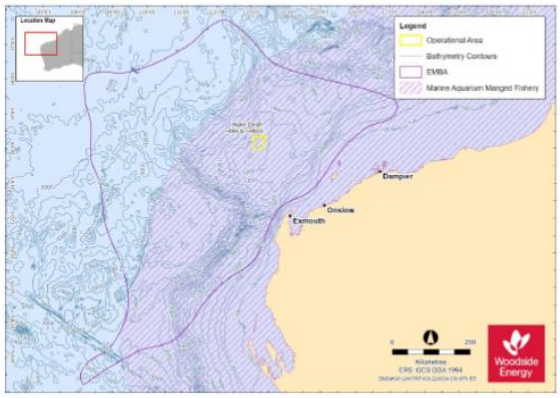
Regards,

APPENDIX A

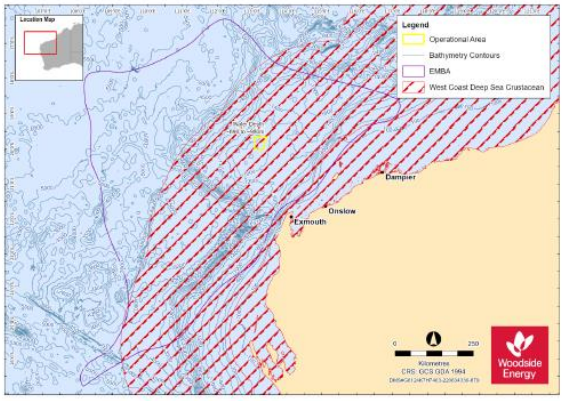
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Subsea Infrastructure Installation EP (Subsea EP)

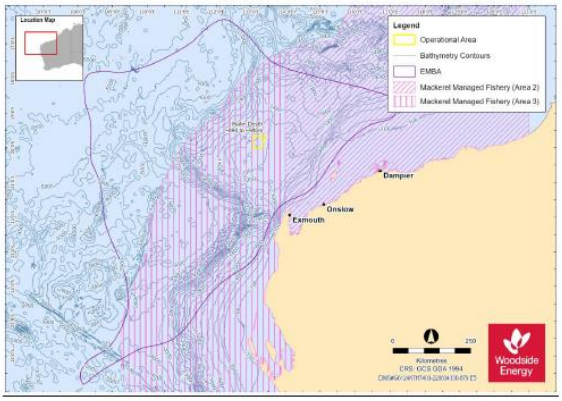
Marine Aquarium Managed Fishery



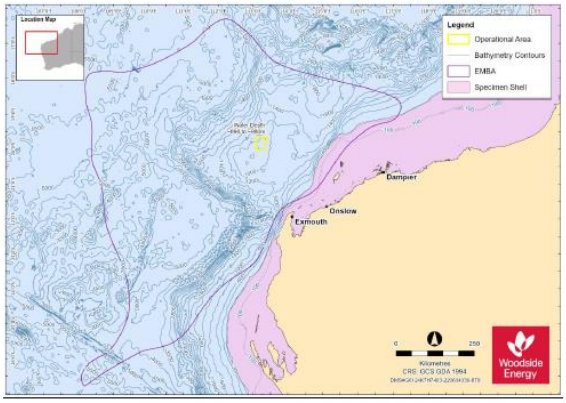
West Coast Deep Sea Crustacean Managed Fishery



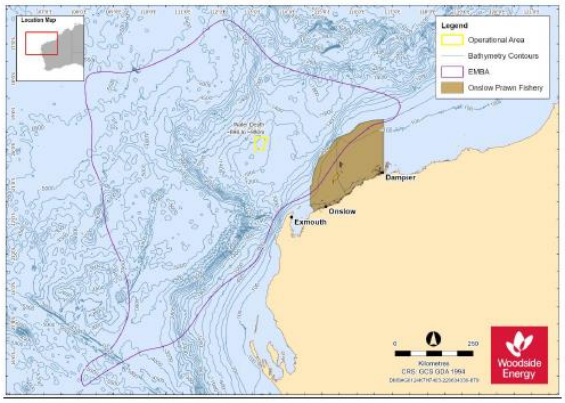
Mackerel Managed Fishery (Area 2 and 3)



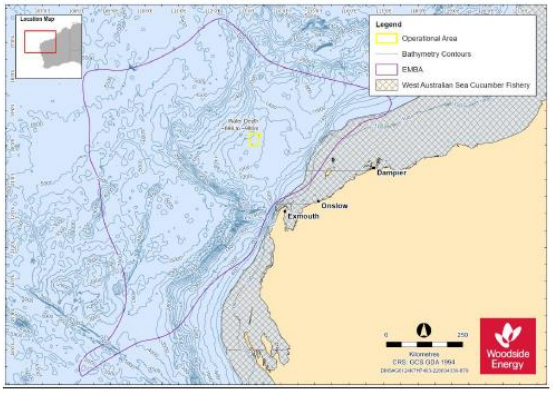
Specimen Shell Managed Fishery



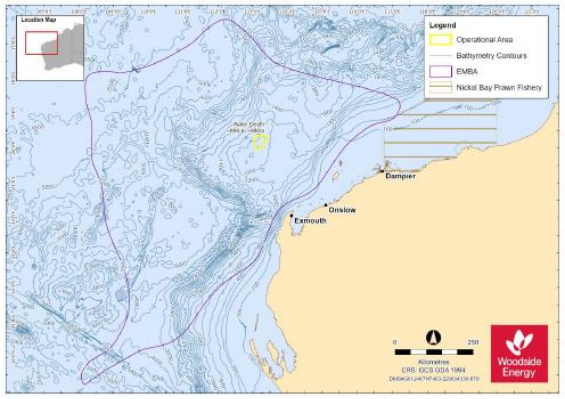
Onslow Prawn Managed Fishery



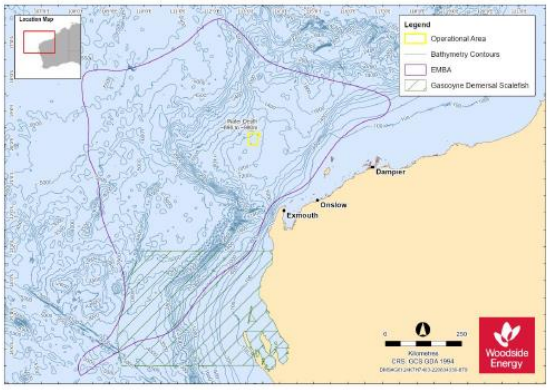
Western Australian Sea Cucumber Managed Fishery



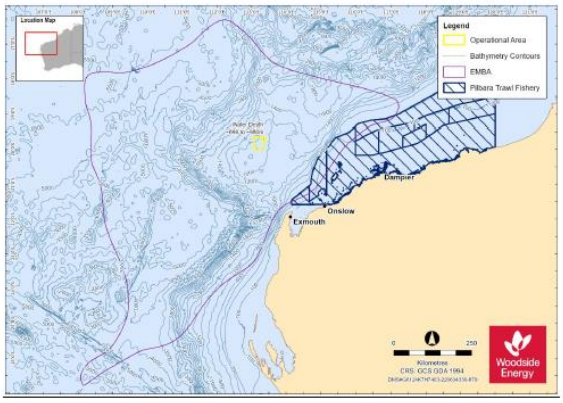
Nickol Bay Prawn Managed Fishery



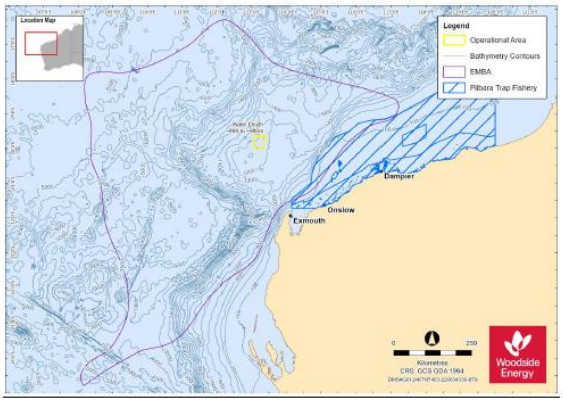
Gascoyne Demersal Scalefish Fishery



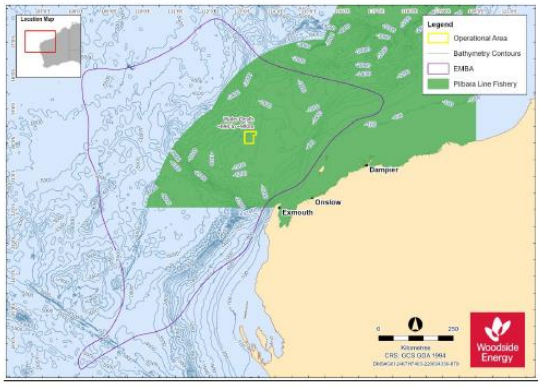
Pilbara Trawl Fishery



Pilbara Trap Fishery



Pilbara Line Fishery



1.150 Letter sent to Gascoyne Recreational Marine Users (65 Licence Holders) (6 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

6 February 2023

Dear Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities**: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities

Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **8 March 2023**.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP, D&C EP, Seismic EP and Subsea EP

1.151 Letter sent to Pilbara/Kimberley Recreational Marine Users (95 Licence Holders) (6 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

6 February 2023

Dear Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside is preparing to submit a further revision of the SITI EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in this revision remains the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	SITI EP	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be

		installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **8 March 2023**.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

APPENDIX A

FEEDBACK	SITI EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP and Subsea EP

1.152 Email sent to UWA (6 February 2023)

Dear [redacted]

Woodside appreciated the opportunity to meet with you in December to discuss the Scarborough development and related Environment Plans (Scarborough EPs).

We understand from our meeting in December 2022 that the proposed Scarborough activities are predominantly outside the scope of interest for UWA. For awareness, Woodside wanted to bring to your attention that it has updated its consultation Information Sheets for the Scarborough EPs, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are attached and are also available on our website.

As Woodside will soon be submitting the proposed EP's, should UWA have any additional feedback on the proposed activities, please let us know by **8 March 2023**.
More information on the Scarborough Project can be found here.

Your feedback and our response will be included in the Scarborough EPs which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Regards,

1.153 Email sent to The Australian Institute of Marine Science (AIMS) (6 February 2023)

Dear [redacted]

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

Woodside is seeking your advice regarding any research activities that AIMS may be undertaking that may overlap with our proposed activities.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	D&C EP	**Seismic EP**	**Subsea EP**
Summary:	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	general supply/support vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by 8 **March 2023**.

Regards,

1.154 Letter sent to Nickol Bay Prawn Managed Fishery (14 Licence Holders), Western Australian Sea Cucumber Managed Fishery (6 Licence Holders),, Gascoyne Demersal Scalefish Fishery (53 Licence Holders), Specimen Shell Managed Fishery, Onslow Prawn Managed Fishery (30 Licence Holders) (6 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

6 February 2023

Dear Fishery Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside is preparing to submit a further revision of the SITI EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in this revision remains the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023.**

Activity:

	SITI EP	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be

		installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **8 March 2023**.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

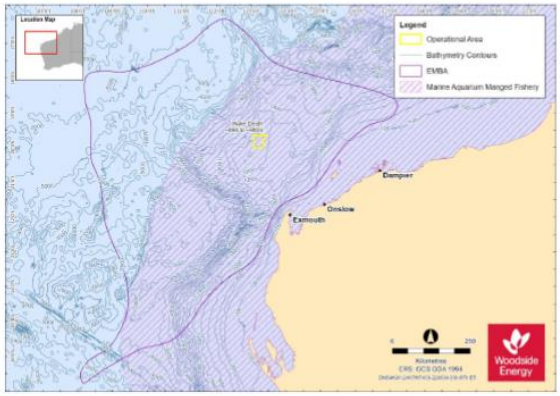
APPENDIX A

FEEDBACK	SITI EP	Subsea EP

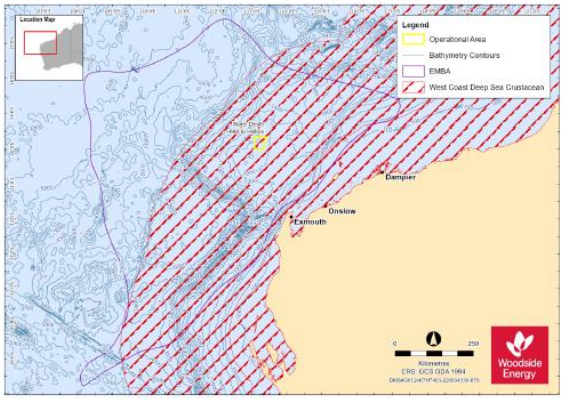
Attached: Consultation Information Sheets for the SITI EP and Subsea EP

Subsea Infrastructure Installation EP (Subsea EP)

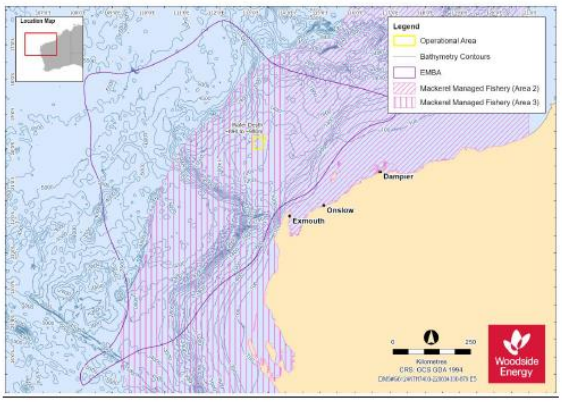
Marine Aquarium Managed Fishery



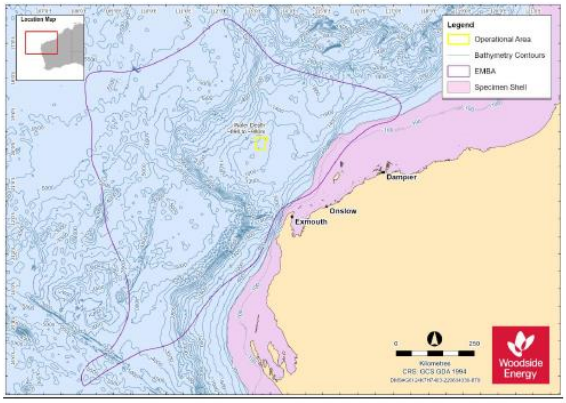
West Coast Deep Sea Crustacean Managed Fishery



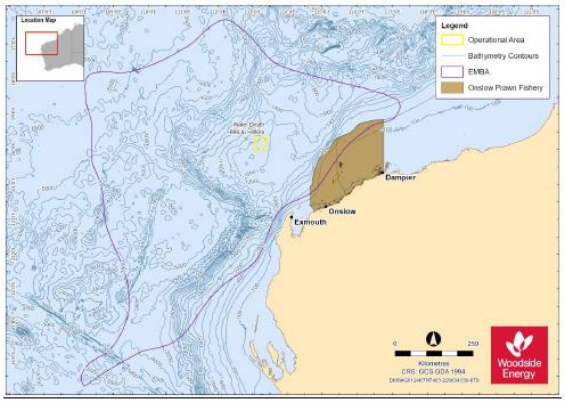
Mackerel Managed Fishery (Area 2 and 3)



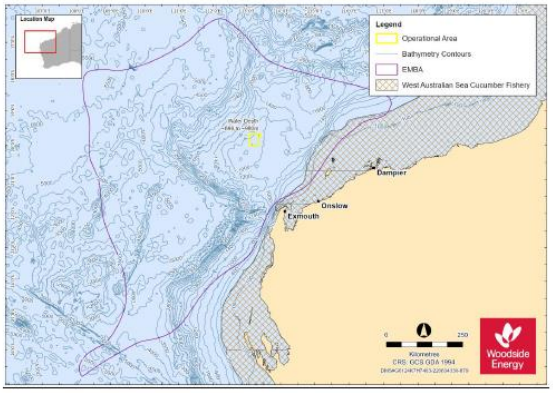
Specimen Shell Managed Fishery



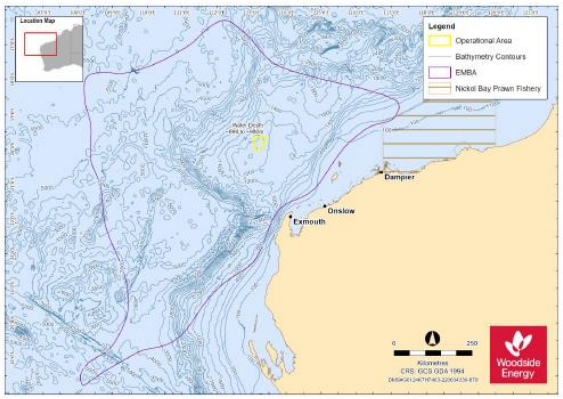
Onslow Prawn Managed Fishery



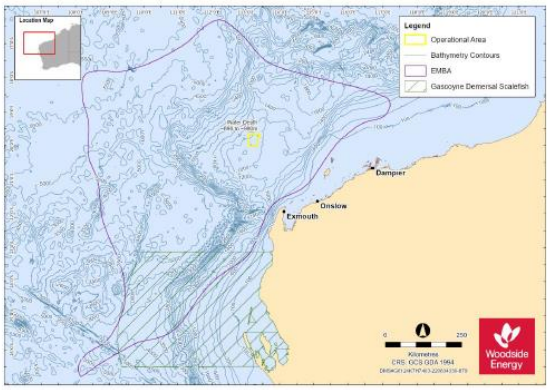
Western Australian Sea Cucumber Managed Fishery



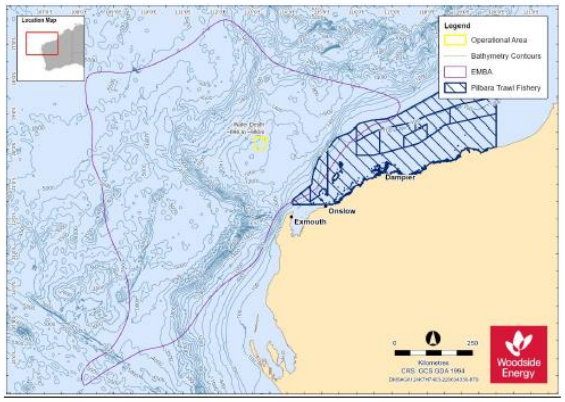
Nickol Bay Prawn Managed Fishery



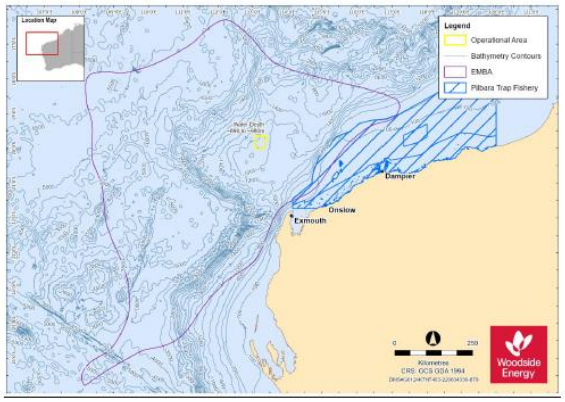
Gascoyne Demersal Scalefish Fishery



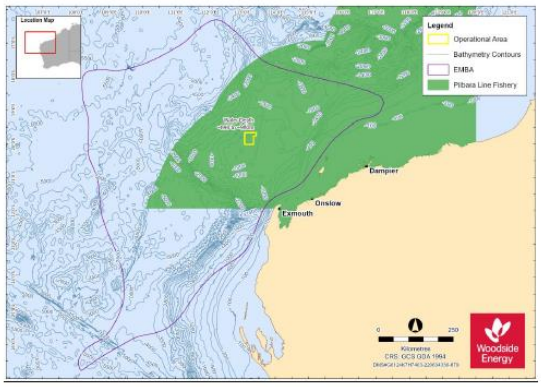
Pilbara Trawl Fishery



Pilbara Trap Fishery



Pilbara Line Fishery



1.155 Email to 350 Australia (6 February 2023)

Dear [redacted]

Woodside previously consulted you (email below) on its plans to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**) in Commonwealth waters for the Scarborough development.

Woodside wanted to bring to your attention that it has updated its consultation Information Sheet for the **Subsea EP**, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. This is attached and is also available on our website.

Woodside welcomes any additional feedback 350 Australia may have in relation to the Subsea EP by **8 March 2023**.

Your feedback and our response will be included in the Subsea 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 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under the Subsea EP is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Regards,

1.156 Email to Australian Marine Conservation Society (AMCS) (6 February 2023)

Dear AMCS

Woodside previously consulted you (email below) on its plans to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**) in Commonwealth waters for the Scarborough development.

Woodside wanted to bring to your attention that it has updated its consultation Information Sheet for the **Subsea EP**, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. This is attached and is also available on our website.

Woodside welcomes any additional feedback AMCS may have in relation to the Subsea EP by **8 March 2023**.

Your feedback and our response will be included in the Subsea 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 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under the Subsea EP is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Regards,

1.157 Email to Conservation Council of Western Australia (CCWA) (6 February 2023)

Dear CCWA

Woodside previously consulted you (email below) on its plans to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**) in Commonwealth waters for the Scarborough development.

Woodside wanted to bring to your attention that it has updated its consultation Information Sheet for the **Subsea EP**, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. This is attached and is also available on our website.

Woodside welcomes any additional feedback CCWA may have in relation to the Subsea EP by **8 March 2023**.

Your feedback and our response will be included in the Subsea 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 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under the Subsea EP is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Regards,

1.158 Email to Sea Shepherd Australia (SSA) (6 February 2023)

Dear Sea Shepherd Australia
Woodside previously consulted you (email below) on its plans to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**) in Commonwealth waters for the Scarborough development.

Woodside wanted to bring to your attention that it has updated its consultation Information Sheet for the **Subsea EP**, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. This is attached and is also available on our website.

Woodside welcomes any additional feedback Sea Shepherd Australia may have in relation to the Subsea EP by **8 March 2023**.

Your feedback and our response will be included in the Subsea 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 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under the Subsea EP is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Regards,

1.159 Email to The Wilderness Society (TWS) (6 February 2023)

Dear [redacted],

Woodside appreciated the opportunity to meet with you in October to discuss the Scarborough development and related Environment Plans.

Woodside wanted to bring to your attention that it has updated its consultation Information Sheet for the Subsea Infrastructure Installation EP (**Subsea EP**), which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. A copy of this is attached.

Woodside welcomes any additional feedback which The Wilderness Society may have on the proposed Subsea EP by **8 March 2023**.

Your feedback and our response will be included in the Subsea 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 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under the Subsea EP is sensitive and we will make this known to NOPSEMA upon submission of the Subsea EP to ensure this information remains confidential to NOPSEMA.

Regards,

1.160 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO) (6 February 2023)

Dear CSIRO Enquiries Team, [redacted] and [redacted],

Woodside previously noted (see email below) that there will be a number of opportunities to provide feedback on its proposed activities.

Woodside previously consulted you on its submitted Environment Plan (EPs) to undertake seabed intervention and trunkline installation activities under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP –** Commonwealth and State components).

As part of its ongoing consultation with the CSIRO, Woodside is also seeking your advice regarding any research activities that CSIRO may be undertaking that may overlap with our proposed activities regarding:

- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. Also attached are Commonwealth fishery figures.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).
Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to

	either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	around subsea locations	• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.
Please provide your views by **8 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.161 Email sent to Australian Border Force (ABF), Director of National Parks (DNP), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Department of Industry, Science and Resources (DISR), Department of Mines, Industry Regulation and Safety (DMIRS), Australian Petroleum Production and Exploration Association (APPEA) (22 February 2023)

Dear Stakeholder
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.162 Email sent to Australian Fisheries Management Authority (AFMA) (22 February 2023)

Dear AFMA
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.163 Email sent to Western Australian Fishing Industry Council (WAFIC) (22 February 2023)

Dear [redacted]
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.164 Email sent to Exmouth Recreational Marine Users (50 Licence Holders) (22 February 2023)

Dear Stakeholder
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.165 Email sent to Yinggarda Aboriginal Corporation (YAC) via Yamatji Marlpa Aboriginal Corporation (YMAC) (22 February 2023)

Dear [redacted]

I hope this message finds you well.

Further to my correspondence of 18 January regarding Woodside's plan to remove the Nganhurra Riser Turret Mooring (RTM), and [redacted] correspondence of 20 January regarding Woodside's Scarborough project, please find attached information about Woodside's decommissioning and drilling activities that we are seeking to consult with Yinggarda Aboriginal Corporation (YAC) about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking YAC's feedback as soon as possible, Woodside is seeking YAC's feedback on these decommissioning and drilling activities by 17 March. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 18 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
    - consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf (woodside.com)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
    - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
    - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
    - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.

- Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

In providing this information and requests for feedback, I acknowledge [redacted] correspondence of 6 February and my response of 10 February in which we discussed arrangements for a meeting between YAC and Woodside. Woodside would be most grateful for the opportunity to meet with YAC, at YAC's earliest convenience, and at a location suitable to YAC. Woodside would also be pleased to provide the resources necessary to hold this meeting and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [redacted], for yours, YAC's and YMAC's consideration of these matters and work to progress these important consultations.

As always, please feel free to contact me on the details below if you require further information or assistance.

Yours sincerely
[redacted]

1.166 Email sent to Pilbara Line Fishery (8 Licence Holders) (22 February 2023)

Dear Fishery Stakeholder
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.167 Letter sent to Marine Aquarium Managed Fishery (12 Licence Holders), Mackerel Managed Fishery (Area 2 and 3) (43 Licence Holders), West Coast Deep Sea Crustacean Managed Fishery (7 Licence Holders) (22 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

22 February 2023

Dear Fishery Stakeholder

Woodside previously consulted you (correspondence dated 3 February 2023) on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

This correspondence included updated Consultation Information Sheets, which are also available on our website, providing additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Kind regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.168 Letter sent to Gascoyne Recreational Marine Users (65 Licence Holders) (22 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

22 February 2023

Dear Stakeholder

Woodside previously consulted you (correspondence dated 6 February 2023) on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

This correspondence included updated Consultation Information Sheets, which are also available on our website, providing additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023 2023**.

Kind regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.169 Email sent to WA Marine Science Institute (WAMSI) (22 February 2023)

Dear [redacted]
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,
Woodside Feedback

1.170 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO) (22 February 2023)

Dear CSIRO Enquiries Team, [redacted] and [redacted],

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.171 Email sent to Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA), North West Slope and Trawl Fishery (4 Licence Holders), Western Deepwater Trawl Fishery (5 Licence Holders) (22 February 2023)

Dear Fishery Stakeholder
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.172 Email sent to Recfishwest, Marine Tourism WA and WA Game Fishing Association (22 February 2023)

Dear Stakeholder
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.173 Email sent to Chevron Australia and Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon via Chevron Australia (22 February 2023)

Dear [redacted] and [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.174 Email sent to Western Gas, Exxon Mobil Australia Resources Company, Finder Energy, KUFPEC, Santos, OMV Australia / Sapura OMV Upstream (WA) (22 February 2023)

Dear Titleholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.175 Email sent to National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP) (22 February 2023)

Dear [redacted]
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Woodside wanted to bring to your attention that it has updated its consultation Information Sheet for the Scarborough SITI EP, D&C EP and Subsea EP, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are attached and also available on our website.
We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.176 Email sent to Karratha CLG (22 February 2023)

Dear Karratha Community Liaison Group

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.177 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) (22 February 2023)

Dear Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Department of Agriculture, Fisheries and Forestry (DAFF)
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.178 Email sent to Exmouth CRG (22 February 2023)

Dear Exmouth Community Reference Group

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **3 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.179 Email sent to BP Developments Australia, Carnarvon Energy, PE Wheatstone, Kyushu Electric Wheatstone, Eni Australia Ltd, Fugro Exploration, JX Nippon O&G Expln (Australia) (22 February 2023)

Dear Titleholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.180 Email sent to Lightmark Enterprises (22 February 2023)

Dear Titleholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.
Kind regards,

Woodside Feedback

1.181 Email sent to Department of Planning, Lands and Heritage (DPLH) (22 February 2023)

Dear Department of Planning, Lands and Heritage (DPLH)

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **3 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.182 Email sent to Western Australian Museum (WAM) (22 February 2023)

Dear Western Australian Museum

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **3 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.183 Email sent to Western Tuna and Billfish Fishery (4 Licence Holders) (22 February 2023)

Dear Fishery Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.184 Email sent to Pilbara Trawl Fishery (7 Licence Holders) and Pilbara Trap Fishery (6 Licence Holders) (22 February 2023)

Dear Fishery Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.185 Email sent to Karratha Recreational Marine Users (9 Licence Holders) (22 February 2023)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.186 Letter sent to Nickol Bay Prawn Managed Fishery (14 Licence Holders), Western Australian Sea Cucumber Managed Fishery (6 Licence Holders), Gascoyne Demersal Scalefish Fishery (53 Licence Holders), Specimen Shell Managed Fishery (29 Licence Holders), Onslow Prawn Managed Fishery (30 Licence Holders) (22 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

22 February 2023

Dear Fishery Stakeholder

Woodside previously consulted you (correspondence dated 6 February 2023) on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

This correspondence included updated Consultation Information Sheets, which are also available on our website, providing additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Kind regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.187 Letter sent to Pilbara/Kimberley Recreational Marine Users (95 Licence Holders) (22 February 2023)

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Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

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Mia Yellagonga
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Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

22 February 2023

Dear Stakeholder

Woodside previously consulted you (correspondence dated 6 February 2023) on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

This correspondence included updated Consultation Information Sheets, which are also available on our website, providing additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Kind regards,

Woodside Feedback

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Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.188 Email to 350 Australia (22 February 2023)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Subsea Infrastructure Installation EP **(Subsea EP)**. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.189 Email to Australian Marine Conservation Society (AMCS) (22 February 2023)

Dear AMCS

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Subsea Infrastructure Installation EP **(Subsea EP)**. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.190 Email to Conservation Council of Western Australia (CCWA) (22 February 2023)

Dear CCWA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Subsea Infrastructure Installation EP **(Subsea EP)**. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.191 Email to Sea Shepherd Australia (SSA) (22 February 2023)

Dear Sea Shepherd Australia

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Subsea Infrastructure Installation EP **(Subsea EP)**. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.192 Email to The Wilderness Society (TWS) (22 February 2023)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Subsea Infrastructure Installation EP **(Subsea EP)**. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.193 Letter sent to JX Nippon Oil & Gas Exploration (23 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

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Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

23 February 2023

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found on our website.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	SITI EP	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation

	installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)

Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed Intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline Installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

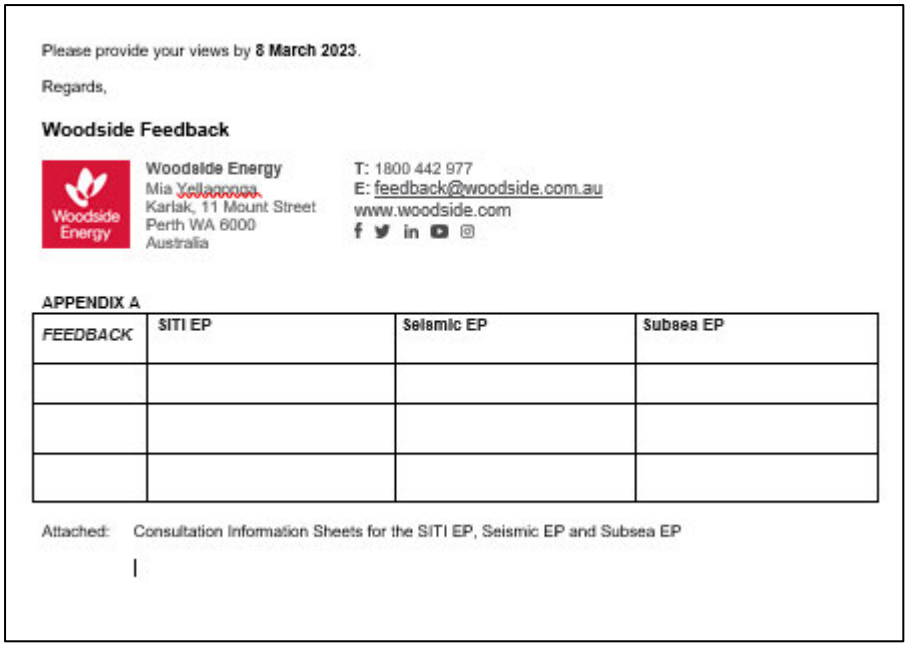
Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Page 3 of 4



Please provide your views by **8 March 2023**.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

APPENDIX A

FEEDBACK	SITI EP	Seismic EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP, Seismic EP and Subsea EP

1.194 Email sent to JX Nippon via ENEOS (23 February 2023)

Good Afternoon [redacted],

My name is [redacted], and I work with Woodside Energy's Corporate Affairs team.

Woodside has submitted Environmental Plans to undertake activities in Commonwealth waters for the Scarborough Development. A part of this involves receiving feedback from title and licence holders. ENEOS (formerly JX Nippon) is one of the aforementioned titleholders.

I have attached the relevant documents, and would appreciate if you could either provide us with feedback within the nominated window, or forward on to the correct person and include Feedback@woodside.com.au and my email, [redacted] in the correspondence.

Please contact me on +61 468 918 581 or reply to this email if you require any clarification.

Kind Regards,

[redacted]

1.196 Email sent to Ngarluma Aboriginal Corporation (NAC) (24 February 2023)

Good morning [redacted] and [redacted]

I mentioned I would be sharing more information when we met on Friday 17 February, to discuss the Environmental Plan (EP) information shared with you to date for Scarborough and Nganghurra RTM. This is the email with further information for NAC to consider if they have any interests in the EMBA (Environment that may be affected) relative to the attached information sheets.

It would be greatly appreciated if you could please acknowledge receipt and confirm the opportunity to meet with the NAC board when they are next due to meet on 29 or 30

March. We welcome the opportunity to spend a whole day with the board on a different day if that works.

This email provides information on Woodside's decommissioning and drilling activities that we are seeking to consult with NAC about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking NAC's feedback as soon as possible, Woodside is seeking NAC's feedback on these decommissioning and drilling activities by **17 March** 2023. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 20 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
  - consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf (woodside.com)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
  - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
  - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
  - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
  - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
  - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
  - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

In providing this information and requests for feedback, I acknowledge that we are working towards presenting to the NAC board at their next board meeting in March. Woodside would be most grateful for the opportunity to meet with NAC, at NAC's earliest convenience, and at a location suitable to NAC. Woodside would also be pleased to provide the resources necessary to hold this meeting and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [redacted] and [redacted] for consideration of these matters and work to progress these important consultations.

Please feel free to contact me on the details below if you require further information or assistance.

Regards

[redacted]
Principal Adviser First Nations Relations, Corporate Australian Operations

1.197 Email sent to Wirrawandi Aboriginal Corporate (WAC) (24 February 2023)

Good morning [redacted]

I hope your Friday is going well.

I mentioned I would be sharing more information when we met on Tuesday 21 February, to discuss the Environmental Plan (EP) information shared with you to date for Scarborough and Nganghurra RTM. This is the email with further information for Wirrawandi to consider if they have any interests in the Environment that may be affected (EMBA) relative to the attached information sheets.

It would be greatly appreciated if you could please acknowledge receipt and confirm the opportunity to meet with the Wirrawandi board when they are next due to meet in Perth in March.

This email provides information on Woodside's decommissioning and drilling activities that we are seeking to consult with Wirrawandi about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking Wirrawandi's feedback as soon as possible, Woodside is seeking Wirrawandi's feedback on these decommissioning and drilling activities by **17 March** 2023. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 18 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
    - consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf (woodside.com)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
    - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.

    - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
    - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
    - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

In providing this information and requests for feedback, I acknowledge that we are working towards presenting to the Wirrawandi board at their next board meeting in March. Woodside would be most grateful for the opportunity to meet at Wirrawandi's earliest convenience, and at a location suitable to Wirrawandi. Woodside would also be pleased to provide the resources necessary to hold this meeting and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [redacted] for consideration of these matters and work to progress these important consultations.

Please feel free to contact me on the details below if you require further information or assistance.

Kind regards

[redacted]
Principal Adviser First Nations Relations, Corporate Australian Operations

1.198 Email sent to Yindjibarndi Aboriginal Corporation (24 February 2023)

Hello [redacted]

I understand you last spoke with [redacted] on 25 January regarding the Environmental Plan (EP) information shared with YAC for the Scarborough project activity and Nganghurra RTM.

This email provides further information on Woodside's decommissioning and drilling activities that we are seeking to understand if YAC has any interests in the Environment that may be affected (EMBA) relative to the attached information sheets and if YAC would like us to consult further on these EPs.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which I understand YAC has verbally advised they have no interests, Woodside is also seeking YAC's feedback on these decommissioning and drilling activities by **17 March 2023**.

The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
    - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
    - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
    - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
    - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

Thank you for your time in considering these matters. We look forward to hearing from you.

Please feel free to contact me on the details below if you require further information or assistance.

Kind regards

[redacted]
Principal Adviser First Nations Relations, Corporate Australian Operations

1.199 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) − 24 February 2023)

Hello [redacted]

I understand you met with [redacted] on 31 January regarding the Environmental Plan (EP) information shared with Robe River Kuruma Aboriginal Corporation (RRKAC) for the Scarborough project activity and Nganghurra RTM and that this information was to be presented at the RRKAC Board meeting this week 21-22 February. [redacted] advised we have a number of EPs we will reach out to RRKAC on.

This email provides further information on Woodside's decommissioning and drilling activities that we are seeking to understand if RRKAC has any interests in the Environment that may be affected (EMBA) relative to the attached information sheets and if RRKAC would like us to consult further on these EPs.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside would appreciate feedback on as soon as possible, Woodside is also seeking RRKAC's feedback on these decommissioning and drilling activities by **17 March 2023**.

The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
  - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
  - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
  - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
  - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
  - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
  - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

Thank you for your time in considering these matters. We look forward to hearing from you.

Please feel free to contact me on the details below if you require further information or assistance.

Kind regards

[redacted]

1.201 Email sent to AHO (28 February 2023)

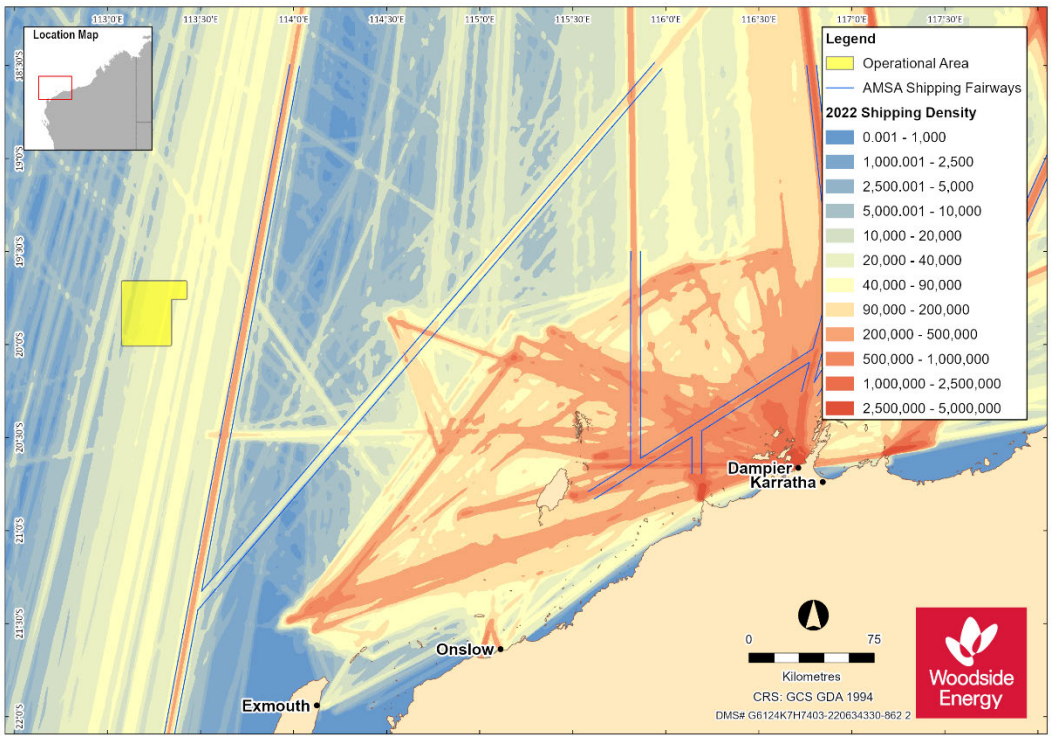
Dear AHO,

As referenced below in our email to you on 27/01, the Shipping Lane figure for each EP's as relevant to their Petroleum Activities Program and associated Operational Area are provided attached. A separate figure showing the Environment that May Be Affected (EMBA) for each activity has also been attached for reference.

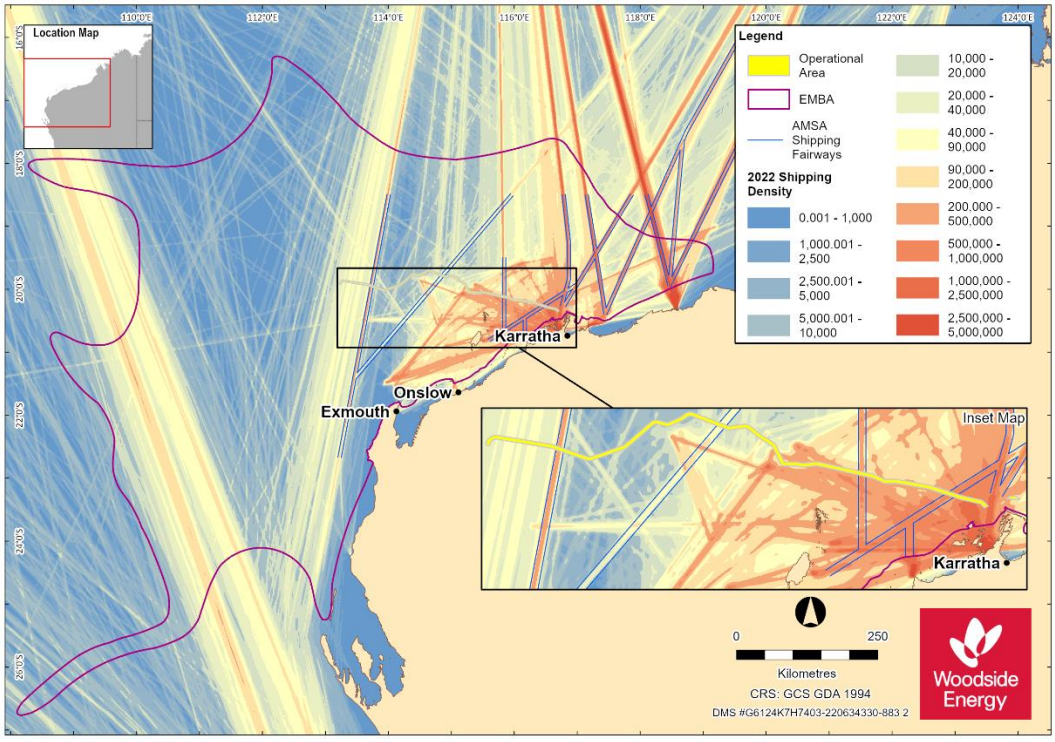
Please let us know should you have any questions regarding the attached or require further information relating to any of the Scarborough activities.

Kind Regards,

Operational Area



EMBA



Woodside Feedback

1.203 Email sent to AMSA - Marine Safety (8 March 2023)

Dear AMSA,

The Scarborough FPU shall be located in the Scarborough Field Petroleum Activity Area (PAA) in approximately 952 m of water (refer to coordinates in below table).

Location and Water Depth of Scarborough FPU

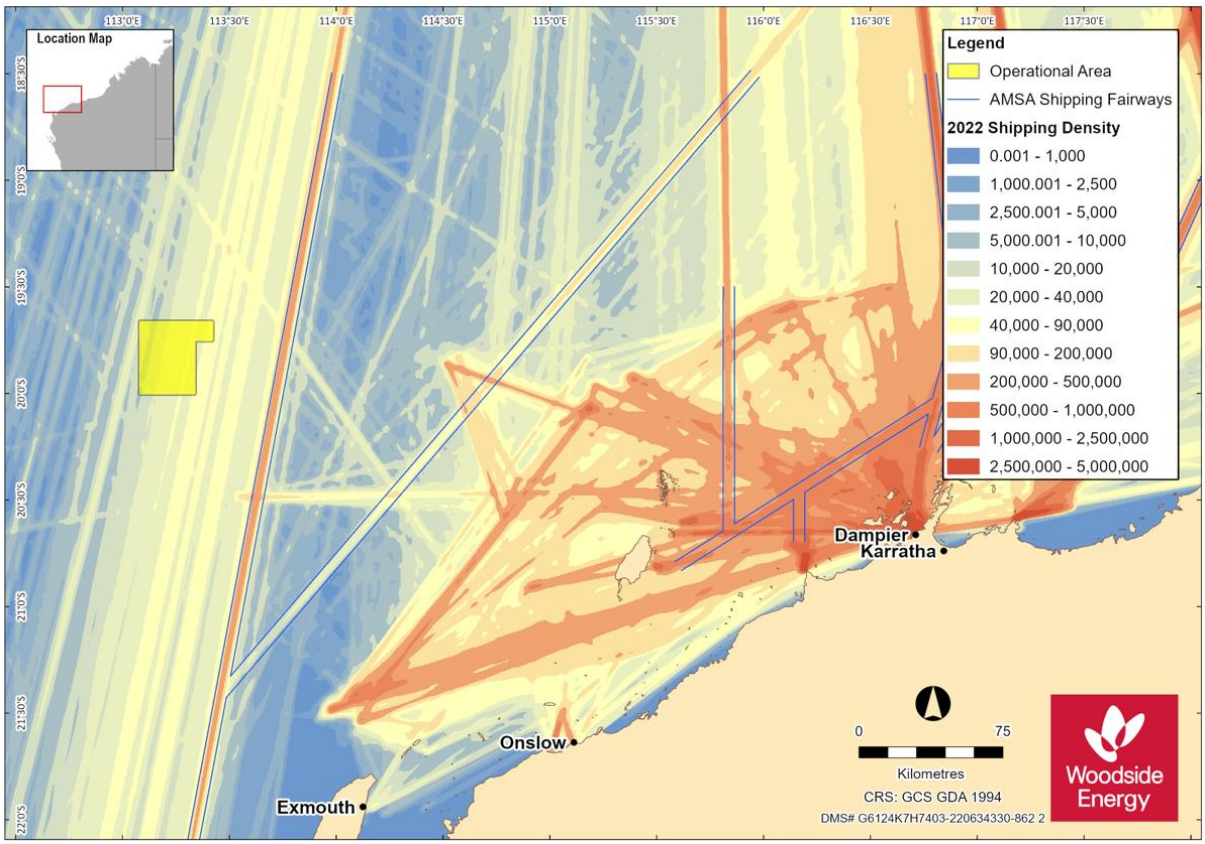
Water Depth (m below MSL)	Northing/ Latitude	Easting/ Longitude	Ref. Grid
952	7,792,300 m N	106.450 m E	MGA94 Grid 50K, 117°E
Cartesian: 19°55'33.7" South 113°14'29.8" East			

The FPU comprises a semi-submersible hull and integrated topsides with the following key components;

- Semi-submersible hull with integrated storage tanks, ballast and bilge systems;
- Risers, umbilicals and mooring system (20 mooring chains connected to suction piles on the seabed); and
- An integrated topsides supporting gas processing systems and equipment, flare systems, utilities, cranes, laydown and storage areas, Utility Building (UB), Living Quarters (LQ) and helideck.

AMSA has introduced a network of marine fairways across the NWMR off WA to reduce the risk of vessel collisions with offshore infrastructure. It is noted that none of these fairways intersect with the PAA; the nearest fairway is approximately 38 km east of the PAA (figure below). Vessel tracking data suggest the majority of shipping is concentrated to the east of the PAA.

Vessel density map for the PAA, derived from AMSA satellite tracking system data (vessels include cargo, LNG tanker, passenger vessels, support vessels, and others/unnamed vessels)



The environment that may be affected (EMBA) is the largest spatial extent where the Petroleum Activities Program could potentially have an environmental consequence (direct or indirect impact). The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this Environment Plan (EP) is determined by a highly unlikely release of marine diesel to the environment as a result of vessel collision. The EMBA does not represent the extent of predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release. This means in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

In addition to the above responses, please find attached an updated Shipping Density map for the Scarborough Seismic EP showing the correct EMBA profile. Please disregard the previous version of this map provided on 28 February 2023.

Please let us know should you have any questions regarding the above or require further information relating to any of the Scarborough activities.

Kind Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
W: www.woodside.com

1.204 Email sent to JX Nippon Oil & Gas Exploration (10 March 2023)

Dear [redacted] and [redacted],

Woodside is sending this email by way of a reminder that the consultation period has closed to provide feedback on the following proposed activities in Commonwealth waters:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**).
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**).
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

The feedback period is also closing soon for the following proposed activities in Commonwealth waters:

- activities on the TPA03 production well to remediate a down-hole valve and continue production from the lower reservoir, under the TPA03 Well Intervention Environment Plan (**TPA03 EP**);
- geotechnical and geophysical surveys, drilling and appraisal of the Julimar South-1 well (previously called JULA-P) and, plug and abandonment of Julimar South-1, if required, under the Julimar Drilling and Surveys Environment Plan (**Julimar EP**).
- drilling and subsea infrastructure installation activities for one well (PLA08) and contingent well intervention activities for current production wells, under the WA-34-L Pyxis drilling and Subsea Installation Environment Plan Revision (**PLA08 EP**).
- subsea decommissioning activities for the Griffin field under the **Griffin Decommissioning and Field Management EP, Griffin Gas Export Pipeline EP** and **Griffin Field Deviation EP**.
- subsea decommissioning activities for the Stybarrow field under the **Stybarrow Plug and Production EP, Stybarrow Decommissioning and Field Management EP** and **Stybarrow Field Deviation EP**.

Please find the attached Consultation Information Sheets relating to the above proposed environment plans (EPs). The Consultation Information Sheets provide background on the proposed activities, including maps, summaries of potential key impacts and risks, and associated management measures. These are also available on our website. You can also subscribe to receive updates on our consultation activities by subscribing here.

Should JX have feedback on the proposed activities, please let us know. Feedback received after the feedback dates (see emails attached) will continue to be assessed and responded to, as required, through the life of the relevant EP.

As we have invited consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to these locations, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plans which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Woodside Feedback

1.205 Email sent to INPEX (13 March 2023)

Dear Titleholder,

Further to the below, please be advised that Woodside plans to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

An updated consultation Information Sheet is attached, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

If you have feedback specific to the proposed activities described under the proposed EP, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **12 March 2023**.

Activity:

	Subsea EP
Summary:	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 900 m – 1000 m

Earliest commencement date:	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **12 March 2023**.

Regards,

1.206 Email sent to DoD (13 March 2023)

Good afternoon [redacted],

Thank you for the Department of Defence's feedback regarding the Scarborough SITI EP, D&C EP, Seismic EP and Subsea EPs, including providing a copy of its restricted airspace and Defence Training Areas off the WA Coast.

In line with Woodside's previous response to the Department of Defence's feedback in relation to the proposed activities, Woodside re-confirms that it notes the Department's advice on the location of the Operational Area and the presence of the North West Exercise Area (NWXA) and restricted airspace.

We also note your advice with respect to the location, identification, removal, or damage to equipment from unexploded ordinances (UXOs).

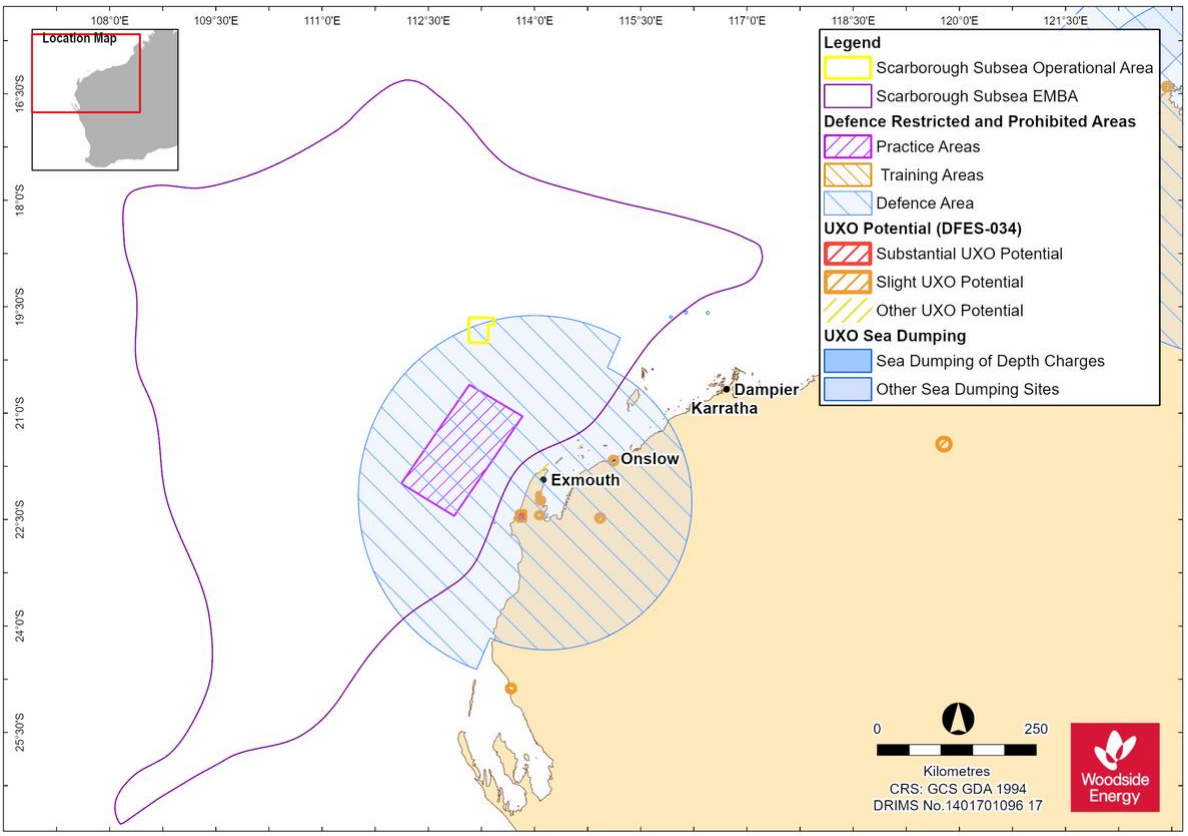
Please accept this as confirmation that:

- Woodside will notify the Department of Defence at least five weeks prior to the commencement of activities.
- Woodside notes the requirement and contact details provided by the Department of Defence to engage with Airservices Australia if the restricted airspace is activated. Woodside will confirm restricted air space status with the Department of Defence as part of its commencement of activity notification.
- AHO has already been engaged for this activity and is included in our activity notification protocols. At its request, AHO will be notified four weeks prior to the start of activities.

The Defence figures for each of the proposed EPs as relevant to their Petroleum Activities Program and associated Operational Areas is attached. A separate figure showing the Environment that May Be Affected (EMBA) is also attached for reference.

Kind regards,

Woodside Feedback


Location Map
108°0'E
109°30'E
111°0'E
112°30'E
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118°30'E
120°0'E
121°30'E
16°30'S
18°0'S
19°30'S
21°0'S
22°30'S
24°0'S
25°30'S
Legend
Scarborough Subsea Operational Area
Scarborough Subsea EMBA
Defence Restricted and Prohibited Areas
Practice Areas
Training Areas
Defence Area
UXO Potential (DFES-034)
Substantial UXO Potential
Slight UXO Potential
Other UXO Potential
UXO Sea Dumping
Sea Dumping of Depth Charges
Other Sea Dumping Sites
Dampier
Karratha
Onslow
Exmouth
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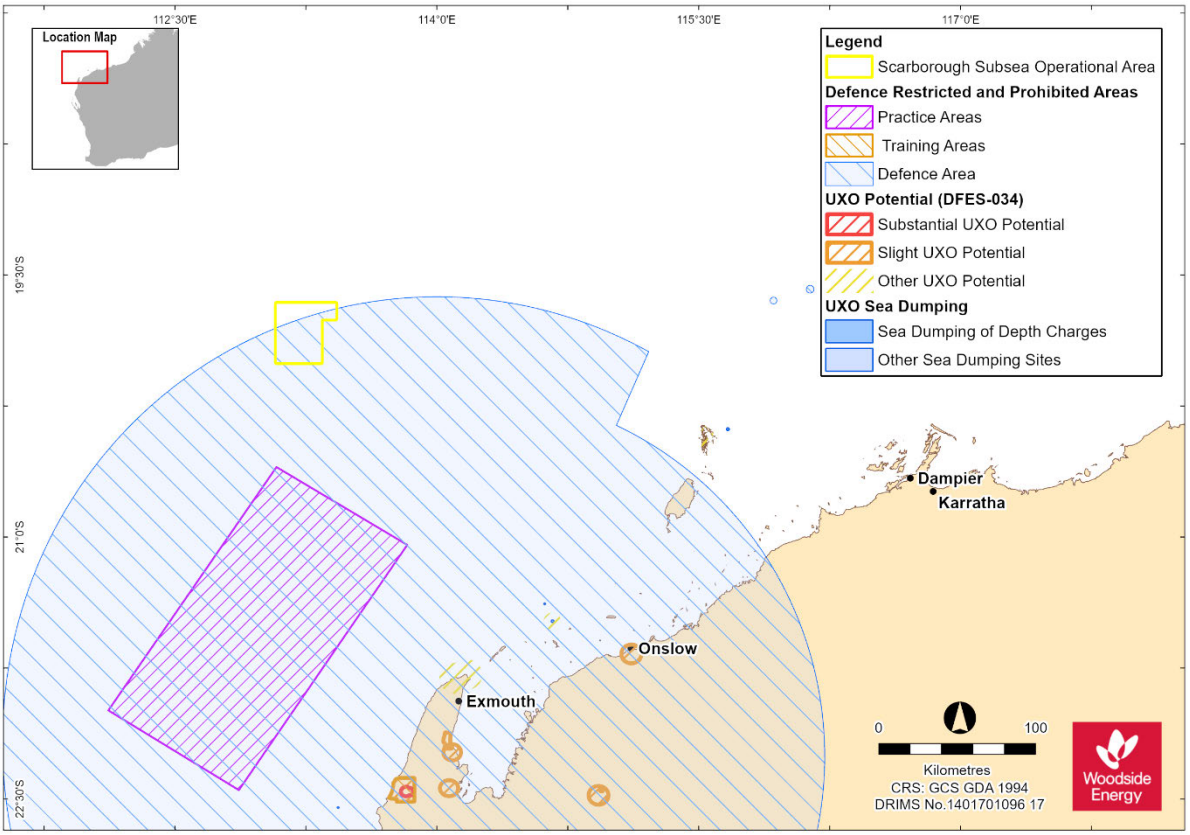
250
Kilometres
CRS: GCS GDA 1994
DRIMS No.1401701096 17
Woodside Energy


Location Map
112°30'E
114°0'E
115°30'E
117°0'E
19°30'S
21°0'S
22°30'S
Legend
Scarborough Subsea Operational Area
Defence Restricted and Prohibited Areas
Practice Areas
Training Areas
Defence Area
UXO Potential (DFES-034)
Substantial UXO Potential
Slight UXO Potential
Other UXO Potential
UXO Sea Dumping
Sea Dumping of Depth Charges
Other Sea Dumping Sites
Dampier
Karratha
Onslow
Exmouth
0
100
Kilometres
CRS: GCS GDA 1994
DRIMS No.1401701096 17
Woodside Energy

1.207 Email sent to WAGFA 13 October 2022)

Dear WAGFA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on activities proposed to be managed under the **WA-61-L and WA-62-L Scarborough Subsea Infrastructure Installation Environment Plan** (EP).

Please see our initial consultation email below and attached information for further details.

We would appreciate your feedback by **21 October 2022** to support our planning for the development of the EP.

Woodside Feedback

1.208 Email sent to Lightmark Enterprises (27 January 2023)

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public).

Woodside is preparing to submit a further revision of the SITI EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in this revision remains the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management

measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

Woodside Feedback

APPENDIX A

FEEDBACK	**SITI EP**	**Seismic EP**

1.209 Email sent Murujuga Aboriginal Corporation (MAC) (24 February 2023)

Wayiba [redacted]

I understand that you met with Woodside on Monday 20 February to further discuss the information shared to date on the Nganghurra RTM decommissioning and Scarborough project activity Environmental Plans (EPs). I believe you have been made aware of other EPs we also request your feedback on.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking MAC's feedback as soon as possible, Woodside is also seeking MAC's feedback on these decommissioning and drilling activities by **17 March 2023**.

The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.

    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
    - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
    - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
    - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
    - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

Thank you for your time in considering these matters and please feel free to contact me on the details below if you require further information or assistance.

Kind regards

[redacted]

1.210 Email sent to Ngarluma Yindjibarndi Foundation Limited (NYFL) − 20 March 2023

Good morning [redacted]

Further to your conversations with the Woodside office please the attached summary information sheets relating to the Scarborough project, specifically:

1. A Summary Overview of the Scarborough project;
2. Summary Information Sheet – Scarborough Subsea Infrastructure Installation

I am aware NYFL has already seen the detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures.

As you are aware, Woodside commits to ongoing engagement for the life of any environmental plan. Any feedback on the proposed activities can be provided to me on the details below or Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

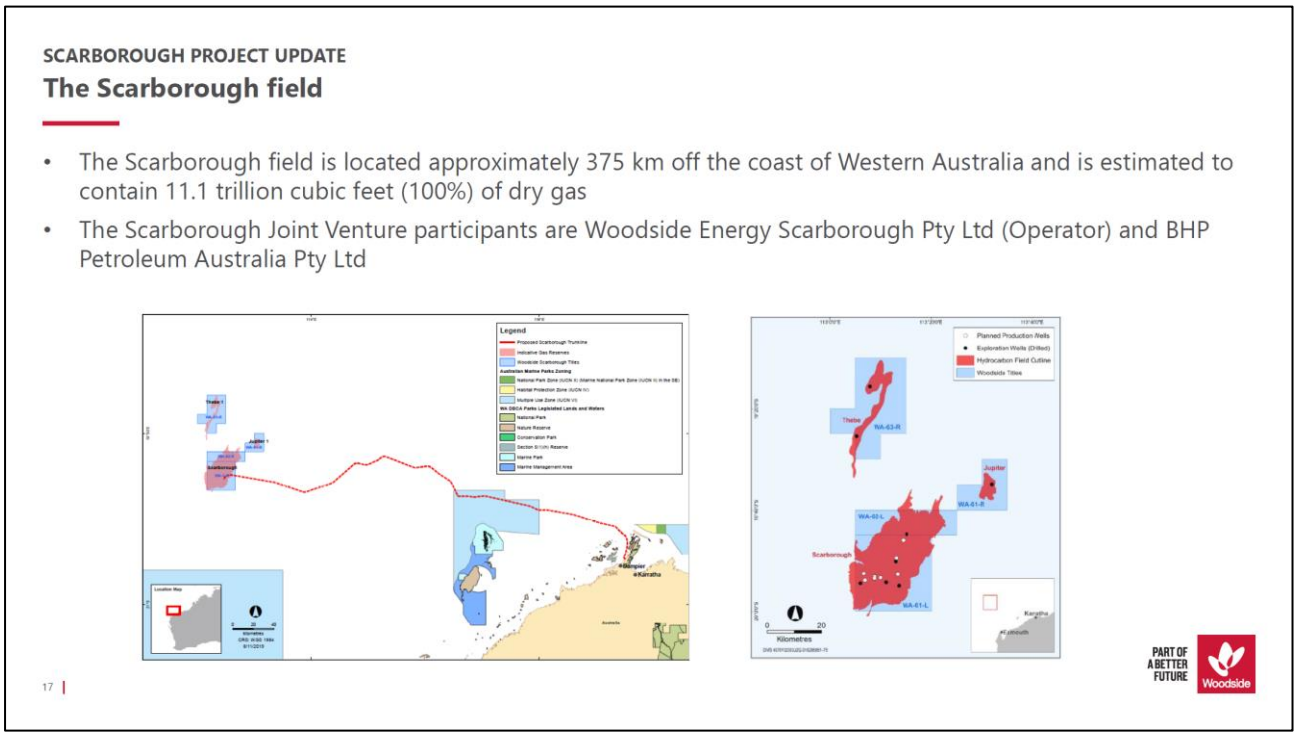
Please don't hesitate contacting me should you wish to discuss further.

Kind regards

[redacted]

Manager First Nations Relations | Corporate Affairs

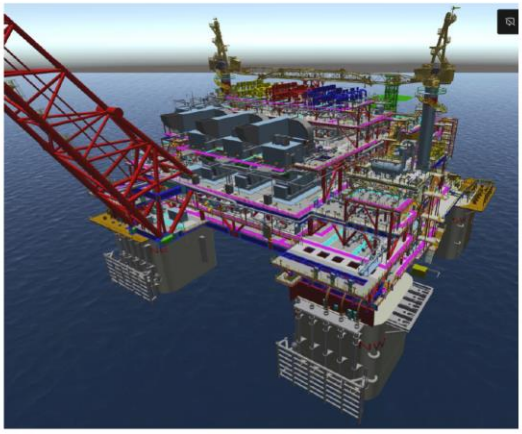
1.211 Presentation to Exmouth Community Reference Group (ECRG) (7 April 2022)



SCARBOROUGH PROJECT UPDATE

Key highlights and activities

- Scarborough JV announced FID November 2021
- Key Scarborough contractors issued full notice to proceed in December 2021, with engineering, procurement and manufacturing well underway
- PHI International awarded helicopter transport and aviation support services for offshore construction activities.
- Local content and Indigenous engagement plans are being agreed with relevant suppliers
- Relevant scopes of work advertised on ICN WA Gateway website
- All key primary environmental approvals are in place to support FID, secondary environmental approvals are progressing



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PART OF A BETTER FUTURE Woodside

SCARBOROUGH PROJECT UPDATE

Approach to aviation and people movements

- Planning activities progressed, including revision of project execution schedule for Scarborough pipeline and FPU installation
- Mobilisation of people via Learmonth Airport targeted from May 2023, expected to peak in January 2024
- No overnight travellers, including during peak construction periods
- Woodside and contractors will work with Shire of Exmouth, CRG, Qantas and other Operators on a fixed wing schedule to accommodate Scarborough requirements
- Cyclone demobilisation will be to Perth, as per the Offshore Cyclone Management Guideline

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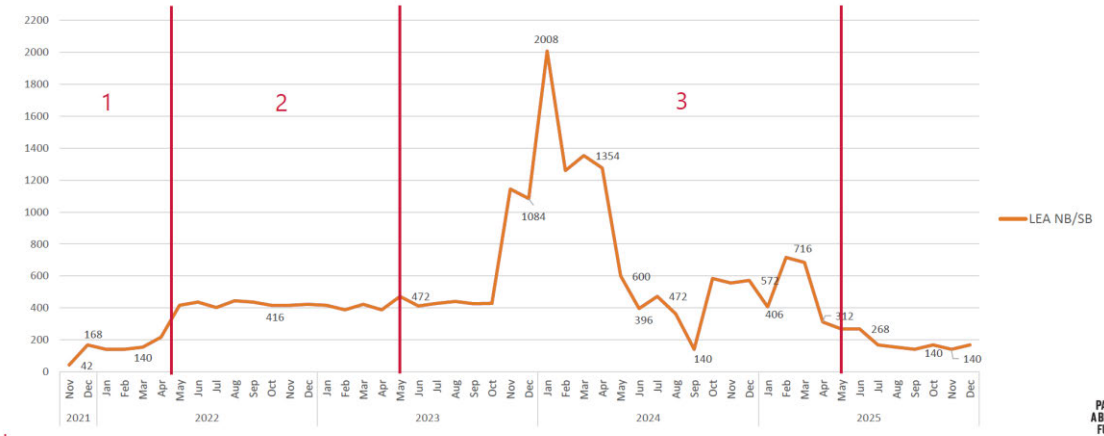
PART OF A BETTER FUTURE Woodside

SCARBOROUGH PROJECT UPDATE

Forecast people movements through Learmonth Airport

1. **Current Ngujima-Yin FPSO operations:** Around 40 travellers per week each way (~80 total) ongoing
2. **Enfield Decommissioning:** Around 90 travellers per week each way from mid-April 2022 to end April 2023 (~180 total)
3. **Scarborough:** Around 106-474 travellers per week from May 2023 to May 2025. Peak construction around January 2024



20

***Figure 1** - Forecasted personnel movements through Learmonth Airport per month.*

PART OF A BETTER FUTURE Woodside

ENVIRONMENT PLANS

Scarborough (Recap)

Scarborough 4D B1 Marine Seismic Survey (Cth)

- Submitted for assessment October 2021
- Proposal to conduct a 4D baseline marine seismic survey over the Scarborough field within Commonwealth waters, ~ 214 km north-west of Exmouth

Scarborough Drilling and Completions (Cth)

- Submitted for assessment November 2021
- Proposal for drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells, ~244 km north-northwest of Exmouth

Scarborough Seabed Intervention and Trunkline Installation (Cth)

- Submitted for assessment Dec 2021
- Proposal for seabed intervention and installation activities for the section of the Scarborough Trunkline in Commonwealth waters that runs ~ 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) (~244 km north-northwest of Exmouth) to the existing onshore Pluto LNG facility on the Burrup Peninsula

Scarborough Subsea Infrastructure Installation (Cth)

- In development
- Proposal for visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU, ~244 km north-northwest of Exmouth

For details, please refer to the information sheets in the emails sent to the Exmouth CLG on 1 Feb and the reminder follow up on 22 Feb

Information sheets are also available on Woodside's website and you can also subscribe to receive updates on our consultation through our website

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PART OF A BETTER FUTURE Woodside Energy

1.212 Email to INPEX (3 May 2023)

Dear Titleholder,

Woodside previously consulted you (email below) on its plans to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Should you have any feedback on the proposed activities, please let us know.

Kind regards,

Woodside Feedback

1.213 Email to Department of Planning, Lands and Heritage (DPLH) (3 May 2023)

Hi [redacted],

I hope your week is going well.

We note that DPLH previously advised it was finalising comments with respect to the following proposed environment plans:

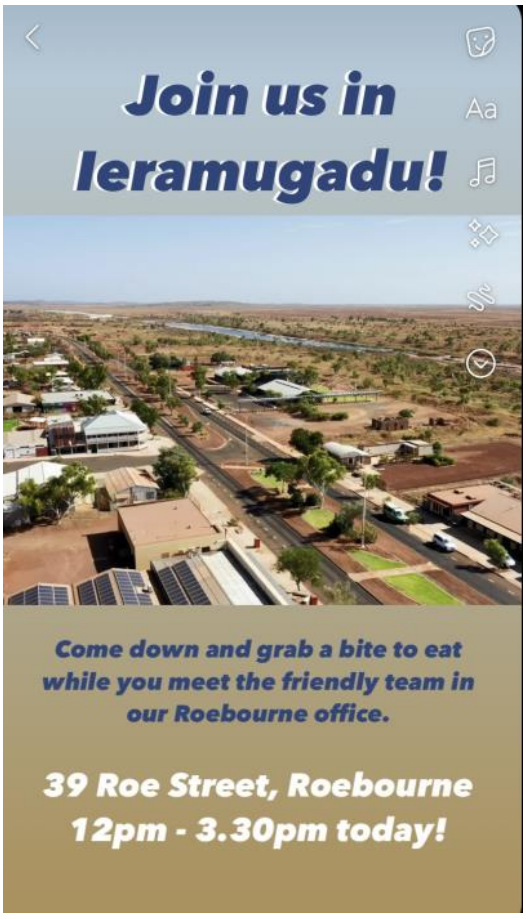
- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

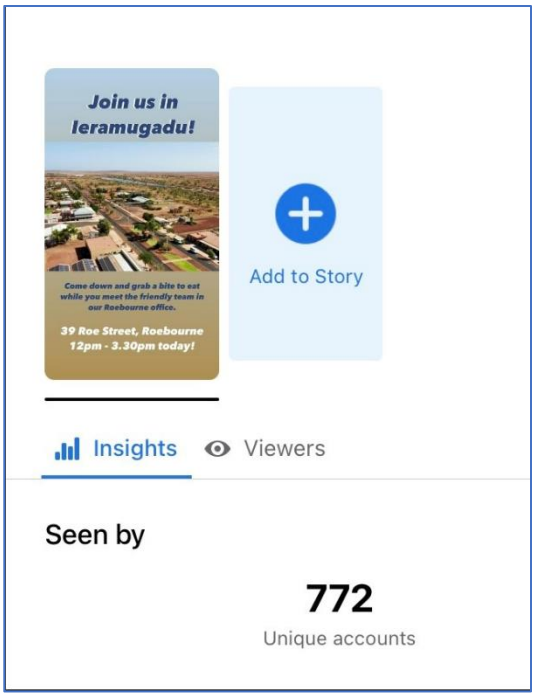
Should DPLH have any feedback on the above proposed activities, please let us know.

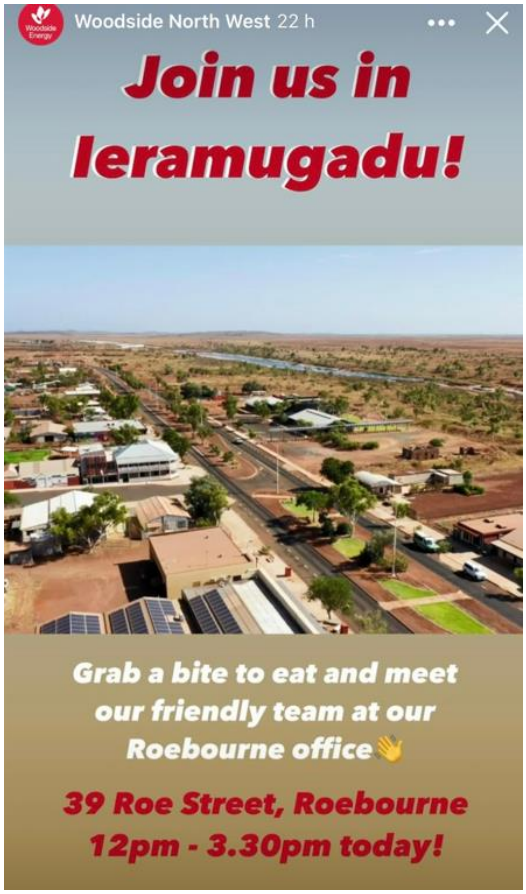
Regards,

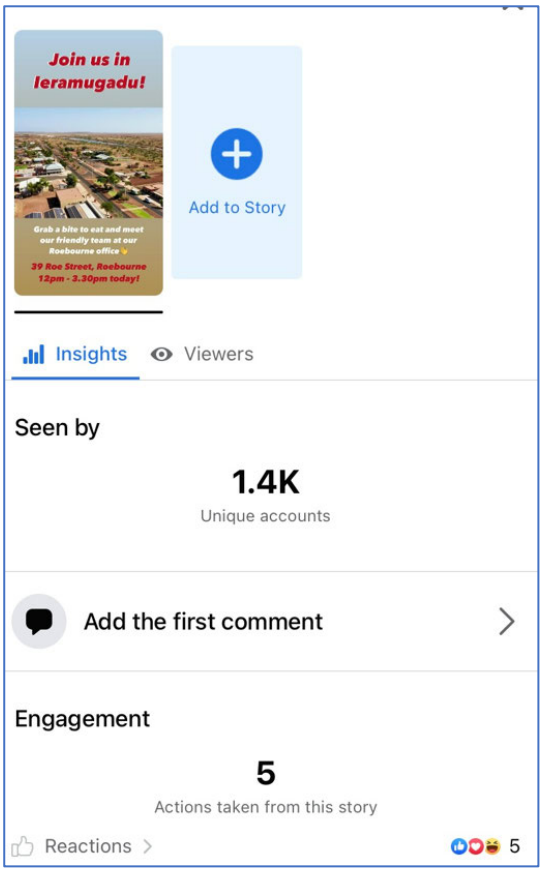
[redacted]

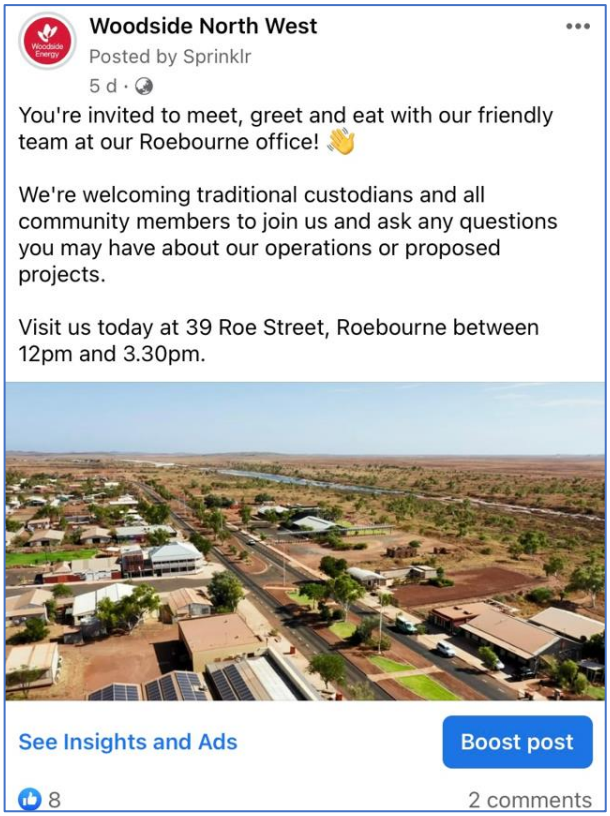
1.214 Community BBQ advertisements and posters

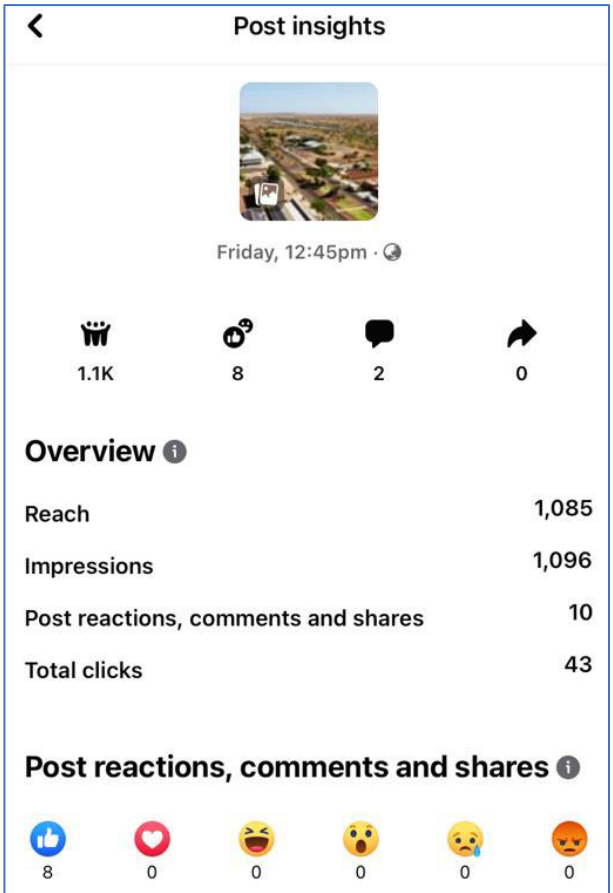





Woodside North West 22 h
Join us in Ieramugadu!
Grab a bite to eat and meet our friendly team at our Roebourne office👋
39 Roe Street, Roebourne
12pm - 3.30pm today!


Join us in Ieramugadu!
Add to Story
Insights
Viewers
Seen by
1.4K
Unique accounts
Add the first comment
Engagement
5
Actions taken from this story
Reactions
5


Woodside North West
Posted by Sprinklr
5 d
You're invited to meet, greet and eat with our friendly team at our Roebourne office! 👋
We're welcoming traditional custodians and all community members to join us and ask any questions you may have about our operations or proposed projects.
Visit us today at 39 Roe Street, Roebourne between 12pm and 3.30pm.
See Insights and Ads
Boost post
8
2 comments


Post insights
Friday, 12:45pm
1.1K
8
2
0
Overview
Reach 1,085
Impressions 1,096
Post reactions, comments and shares 10
Total clicks 43
Post reactions, comments and shares
8
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0
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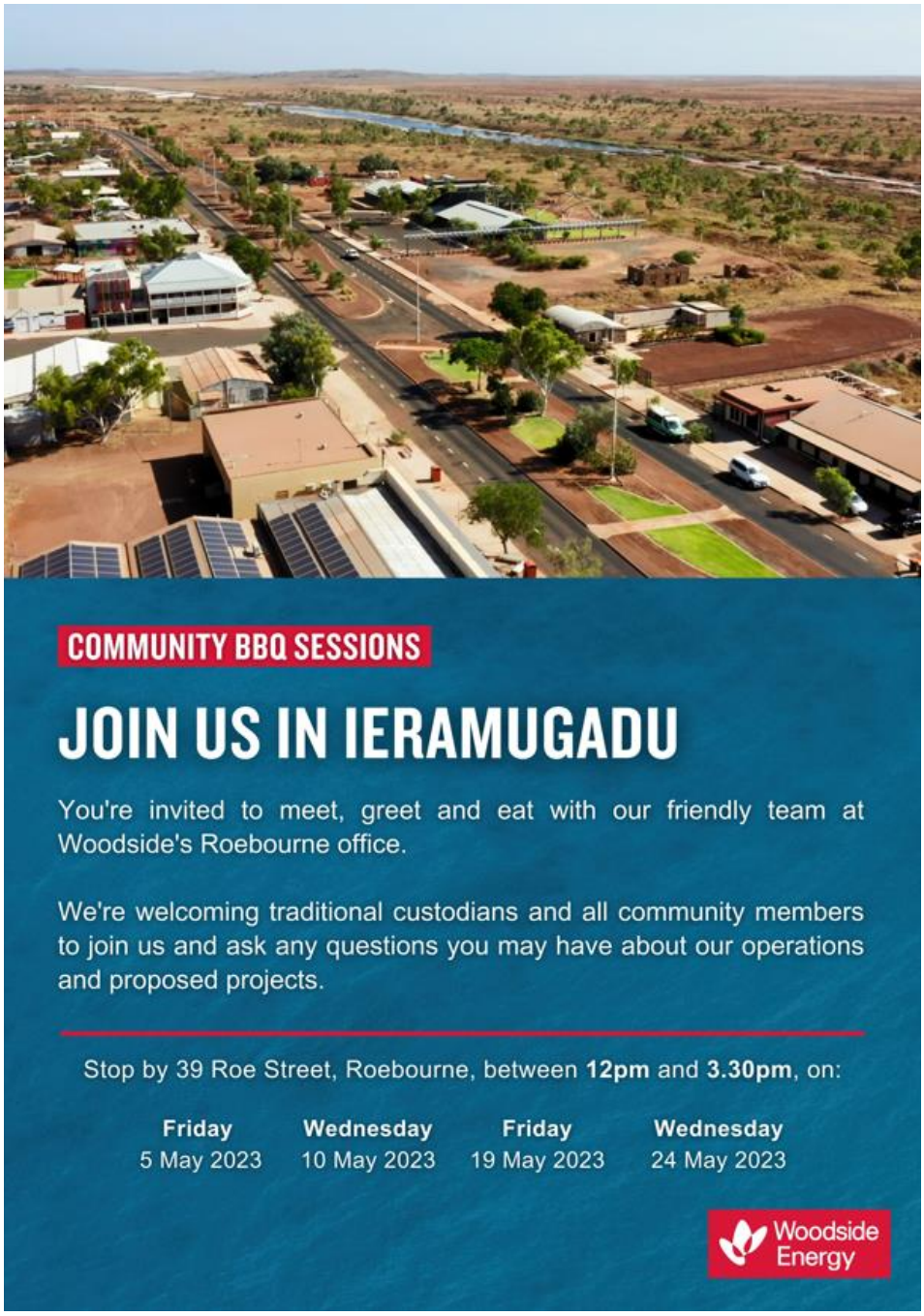

COMMUNITY BBQ SESSIONS
JOIN US IN IERAMUGADU
You're invited to meet, greet and eat with our friendly team at Woodside's Roebourne office.
We're welcoming traditional custodians and all community members to join us and ask any questions you may have about our operations and proposed projects.
Stop by 39 Roe Street, Roebourne, between 12pm and 3.30pm, on:
Friday 5 May 2023
Wednesday 10 May 2023
Friday 19 May 2023
Wednesday 24 May 2023
Woodside Energy

1.215 Social media campaign

APPENDIX G: DEPARTMENT OF ABORIGINAL AFFAIRS HERITAGE SEARCH RESULTS

Aboriginal Heritage Inquiry System

List of Registered Aboriginal Sites

Search Criteria

No Registered Aboriginal Sites in Shapefile - EMBA_20210507. Warning: Search area complex so results may be inaccurate. Contact DPLH for assistance.

Disclaimer

The *Aboriginal Heritage Act 1972* preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

Copyright

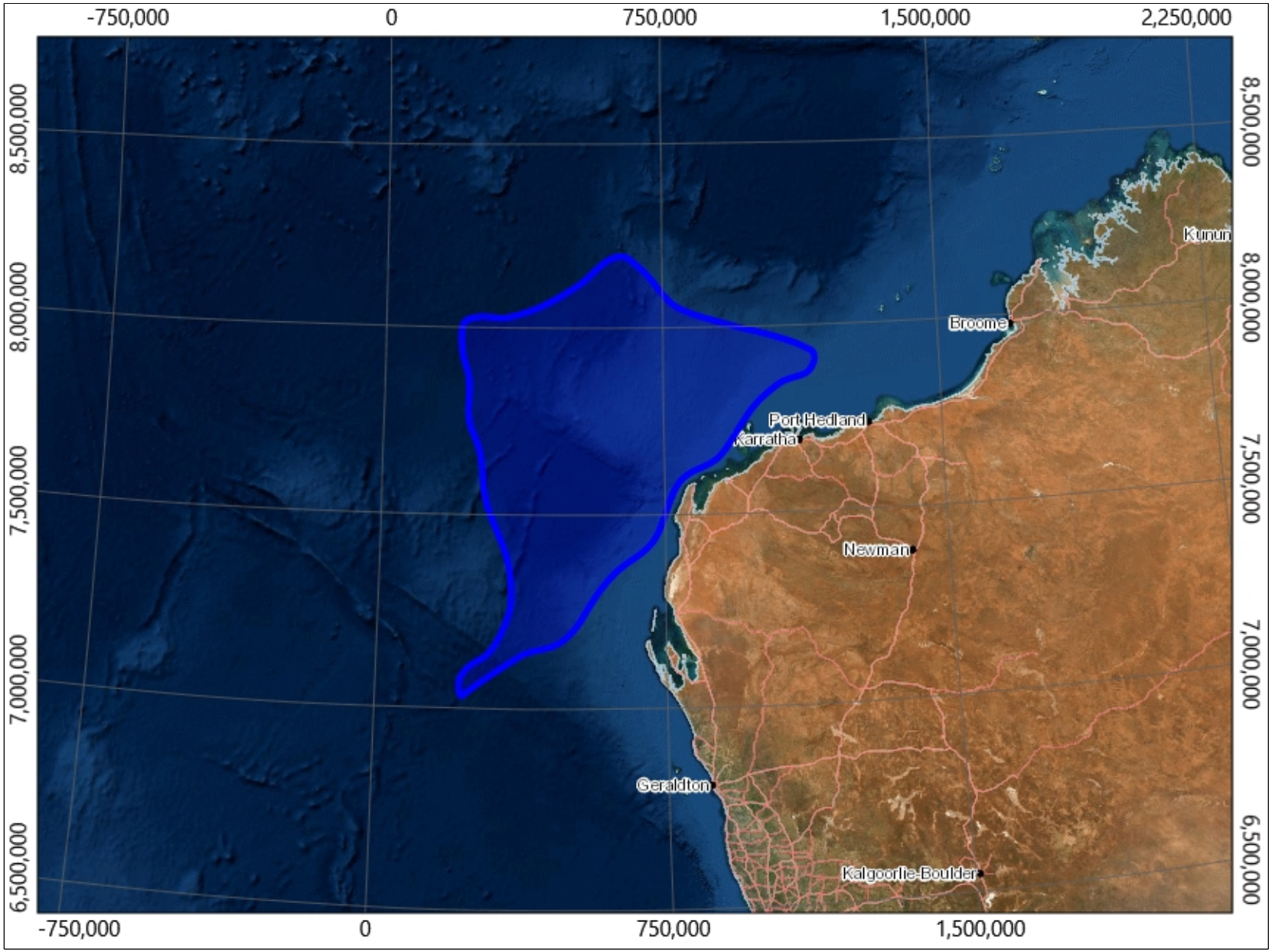
Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

Department of Planning, Lands and Heritage

Aboriginal Heritage Inquiry System

Map of Registered Aboriginal Sites



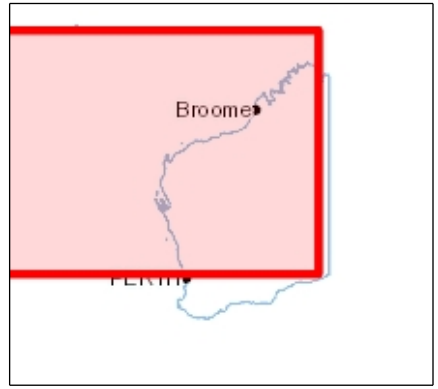
Legend

- Registered Aboriginal Site
- Search Area
- Town
- Road
- River
- Local Government Authority

544.70 kilometres

Map Scale 1 : 16,510,000

MGA Zone 49 (GDA94)



APPENDIX H: OIL POLLUTION FIRST STRIKE PLAN

WA-61-L and WA-62-L Subsea Infrastructure Installation – Oil Pollution First Strike Plan

Corporate HSE

Hydrocarbon Spill Preparedness

May 2023
Revision 0

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 (CIMT) Duty Manager
	State waters	1	Woodside	CIMT Duty Manager
		2/3	Department of Transport (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

SPILLS IN STATE WATERS

As detailed in the table above, in the event of a hydrocarbon spill (hereafter 'spill') where Woodside Energy Ltd ('Woodside') is the responsible party/ Control Agency and the spill may impact State waters and shorelines, Woodside (or the Vessel Master) will commence the initial response actions and notify the Western Australian Department of Transport (DoT).

Initially Woodside will be required to make available an appropriate number of suitably qualified persons to work in the DoT IMT (APPENDIX F – Woodside Liaison Officer Resources to DoT). DoT/ PPA'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 or to commence the initial response actions to a spill prior to DoT establishing incident control in line with DoT *Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements* (July 2020). Cost recovery arrangements for offshore marine pollution incidents (MOP) are in accordance with Section 9 of the Guidance Note:

https://www.transport.wa.gov.au/mediaFiles/marine/MAC_P_Westplan_MOP_OffshorePetroleumIndGuidance.pdf

Woodside's Incident Management Structure for a hydrocarbon spill, including Woodside Liaison Officer's command structure within DoT can be seen at APPENDIX E – Woodside Incident Management Structure.

The coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/ shorelines is shown in APPENDIX D – Coordination Structure for a Concurrent Hydrocarbon Spill in Both Commonwealth and State Waters/Shorelines.

RESPONSE PROCESS OVERVIEW

For guidance on credible scenarios and hydrocarbon characteristics, refer to APPENDIX A

ALL INCIDENTS

Notify the Woodside Communication Centre (WCC) on:

[redacted]

Incident Controller or delegate to make relevant notifications in **Table 1-1** of this Oil Pollution First Strike Plan.

LEVEL 1

FACILITY INCIDENT	VESSEL INCIDENT
Coordinate pre-identified tactics in **Table 2-1** of this Oil Pollution First Strike Plan. Remember to download each Operational Plan.	Notify AMSA and coordinate pre-identified tactics in **Table 2-1** of this Oil Pollution First Strike Plan Remember to download each Operational Plan.

If the spill escalates such that the site cannot manage the incident, inform the WCC on:

[redacted] and escalate to a level 2/3 incident.

LEVEL 2/3

FACILITY INCIDENT	VESSEL INCIDENT
Handover control to CIMT and notify DoT	Handover control to AMSA and stand up CIMT to assist.
Commence quick revalidation of the recommended strategies on **Table 2-1** taking into consideration seasonal sensitivities and current situational awareness. Commence validated strategies.	If requested by AMSA: Commence quick revalidation of the recommended strategies on **Table 2-1** taking into consideration seasonal sensitivities and current situational awareness. Commence validated strategies.
Create an Incident Action Plan (IAP) for all ongoing operational periods The content of the IAP should reflect the selected response strategies based on current situational awareness. For the full detailed pre-operational Net Environmental Benefit Analysis (NEBA) see the OSPRMA Appendix A	If requested by AMSA: Create an IAP for all ongoing operational periods The content of the IAP should reflect the selected response strategies based on current situational awareness. For the full detailed pre-operational NEBA see the OSPRMA Appendix A

1. NOTIFICATIONS

The Incident Controller or delegate must ensure the below notifications (**Table 1-1**) are completed within the designated timeframes.

For spills from a vessel, relevant notifications must be undertaken by a WEL representative.

Table 1-1: Notifications

Timing	By	To	Name	Contact	Instruction	Form	Complete? (✓)
In the event of an incident between campaign vessels, also activate relevant vessel Emergency Response Plans and/or Bridging Documents							
In the event of an incident impacting live well infrastructure, also activate *Scarborough Drilling and Completions Oil Spill First Strike Plan*							
NOTIFICATIONS FOR ALL LEVELS OF SPILL							
Immediately	Offshore Installation Manager (OIM) or Vessel Master	Woodside Communication Centre (WCC)	Duty Manager	[redacted]	Verbally notify WCC of event and estimated volume and hydrocarbon type.	Verbal	
Within 2 hours	Woodside Site Rep (WSR)	National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA[1])	Incident notification office	[redacted]	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 DMIRS).	[redacted]	
Within 3 days	WSR				Provide a written NOPSEMA Incident Report Form as soon as practicable (no later than 3 days after notification) (cc to NOPTA and DMIRS) NOPSEMA [redacted] NOPTA [redacted] DMIRS [redacted]	[redacted]	
As soon as practicable	CIMT DM or Delegate	Woodside	Environment Duty Manager	As per roster	Verbally notify Duty Environment 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 DM or Delegate	WA Department of Transport	DoT Maritime Environmental Emergency Response Unit (MEER) Duty Officer	[redacted]	Verbally notify DoT MEER Duty Officer that a spill has occurred and, if required, request use of equipment stored in [Karratha/Fremantle/]. Follow up with a written POLREP as soon as practicable following verbal notification. Additionally, DoT to be notified if spill is likely to extend into WA State waters. Request DoT to provide Liaison to WEL IMT.	[redacted]	
As soon as practicable	CIMT DM or Delegate	Department of Climate Change, Energy, the Environment and Water (DCCEEW) Director of National Parks	Marine Park Compliance Duty Officer	[redacted]	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	CIMT DM or Delegate	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Duty Officer	[redacted]	Phone call notification	Verbal	

[1] Notification to NOPSEMA must be from a Woodside Representative.

Department of Biodiversity, Conservation and Attractions							
As soon as practicable	Public Information	Relevant persons/ organisations	To be determined	To be determined	Should it be identified that additional persons such as, but not limited to, commercial fishers, tourism operators or 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 WA-61-L and WA-62-L Subsea Infrastructure Installation. Relevant persons/ organisations 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 Act, part II, section 11(1)	Vessel Master	Australian Maritime Safety Authority (AMSA)	Response Coordination Centre (RCC)	[redacted]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification.	[redacted]	
ADDITIONAL LEVEL 2/3 NOTIFICATIONS							
As soon as practicable	CIMT DM or Delegate	Australian Marine Oil Spill Centre (AMOSC)	AMOSC Duty Manager	[redacted]	Notify AMOSC that a spill has occurred and follow-up with an email from the CIMT Leader/ CIMT Deputy Leader/ IMT IC/ CMT Adviser/ 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.	[redacted]	
As soon as practicable	CIMT DM or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	[redacted]	Contact OSRL duty manager and request assistance from technical advisor in Perth. Send the completed notification form to OSRL as soon as practicable.	[redacted]	
					For mobilisation of resources, send the Mobilisation Form to OSRL as soon as practicable. The mobilisation form must be signed by a nominated callout authority from Woodside. OSRL can advise the names on the call out authority list, if required.	[redacted]	
As soon as practicable if extra personnel are required for incident support	CIMT DM or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	[redacted]	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	Hydrocarbon	Level	Pre- Identified Tactics	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
	MDO				
Operational monitoring –tracking buoy (OM02)	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.	**DAY 1:** Tracking buoy deployed within 2 hours.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02) of The Operational Monitoring Operational Plan. Deploy tracking buoy in accordance with [redacted].
Operational monitoring – predictive modelling (OM01)	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 – Credible spill scenarios and hydrocarbon information.	**DAY 1:** Initial modelling within 6 hours using the Rapid Assessment Tool.	Predictive Modelling of Hydrocarbons to Assess Resources at Risk (OM01 of The Operational Monitoring Operational Plan). *Planning to download immediately and follow steps*
	Yes	ALL	Send Oil Spill Trajectory Modelling (OSTM) form (Appendix B, Form 7) to RPS Response [redacted]).	**DAY 1:** Detailed modelling within 4 hours of RPS Response receiving information from Woodside.	
Operational monitoring – aerial surveillance (OM02)	Yes	ALL	Instruct Aviation Duty Manager to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in Appendix B Form 8.	**DAY 1:** 2 trained aerial observers. 1 aircraft available. Report made available to the IMT within 2 hours of landing after each sortie.	Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational Monitoring Operational Plan). *Planning to download immediately and follow steps*
Operational monitoring – satellite tracking (OM02)	Yes	ALL	The Intelligence duty manager should be instructed to stand up Kongsberg Satellite Services (KSAT) to provide satellite imagery of the spill ([redacted]).	**DAY 1:** Service provider will confirm availability of an initial acquisition within 2 hours. Data received to be uploaded into Woodside Common Operating Picture.	
Operational monitoring – monitoring hydrocarbons in water (OM03)	Yes	ALL	Consider the need to mobilise resources to undertake water quality monitoring (OM03).	**DAY 3:** Water quality assessment access and capability Daily fluorometry reports will be provided to IMT.	Detecting and Monitoring for the Presence and Properties of Hydrocarbons in the Marine Environment (OM03 of The Operational Monitoring Operational Plan).
Operational monitoring – pre-emptive assessment of receptors at risk (OM04)	Yes	ALL	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	10 days prior to any impact predicted by OM01/02/03, and in agreement with WA DoT (for Level 2/3 incidents), deployment of 2 specialists from resource pool in establishing the status of sensitive receptors	Pre-emptive Assessment of Sensitive Receptors (OM04 of The Operational Monitoring Operational Plan).
Operational monitoring – shoreline assessment (OM05)	Yes	ALL	Consider the need to mobilise resources to undertake shoreline assessment surveys (OM05).	10 days prior to any impact predicted by OM01/02/03, and in agreement with WA DoT (for Level 2/3 incidents), deployment of 1 specialist(s) in Shoreline Contamination Assessment Techniques (SCAT) from resource pool for each of the RPAs with predicted impacts	Shoreline Assessment (OM05 of The Operational Monitoring Operational Plan).
Surface dispersant	No	N/A	This response strategy is not recommended for spills of MDO.		

Technique	Hydrocarbon MDO	Level	Pre- Identified Tactics	ALARP Commitment Summary	Link to Operational Plans for notification numbers and actions
Containment and recovery	**No**	**N/A**	This response strategy is not recommended for spills of MDO.		
Mechanical dispersion	**No**	**N/A**	This response strategy is not recommended for spills of MDO.		
In-situ burning	**No**	**N/A**	This response strategy is not recommended for spills of MDO.		
Shoreline protection and deflection	**No**	**N/A**	No shoreline impacts predicted.		
Shoreline clean-up	**No**	**N/A**	No shoreline impacts predicted.		
Oiled wildlife response	**Yes**	**ALL**	If oiled wildlife is a potential impact, request AMOSC to mobilise containerised oiled wildlife first strike kits and relevant personnel. Refer to relevant Tactical Response Plan for potential wildlife at risk. Mobilise AMOSC Oiled Wildlife Containers. Consider whether additional equipment is required from local suppliers.		Oiled Wildlife Response Operational Plan
Scientific monitoring (type II)	**Yes**	**ALL**	Notify Woodside science team of spill event.		Oil Spill Scientific Monitoring Programme – Operational Plan

3. RESPONSE PROTECTION AREAS

Action: Provide relevant Control Agency with applicable Tactical Response Plans for any Response Protection Areas (RPAs) identified during operational monitoring.

Based on hydrocarbon spill modelling results, the sensitive receptors outlined in **Table 3-1** are identified as priority protection areas, as they have the potential to be contacted by hydrocarbon at or above impact threshold levels within 48 hours of a spill.

Table 3-1: Receptors for Priority Protection with Potential Impact within 48 Hours

Receptor	Distance and Direction from Operational Area (km)	Minimum time to shoreline contact (above 100g/m^2) in days	Maximum shoreline accumulation (above 100g/m^2) in m^3	Tactical Response Plans
Open Ocean – Commonwealth Waters	Overlaps	N/A	N/A	N/A

Hydrocarbon spill modelling results indicate the sensitive receptors listed below have the potential to be contacted by hydrocarbons beyond 48 hours of a spill:

- Open Commonwealth waters
- Gascoyne AMP (surface hydrocarbon concentrations ≥10 g/m^2 and entrained hydrocarbon concentrations ≥100 ppb)
- Carnarvon Canyon AMP (entrained hydrocarbon concentrations ≥100 ppb)
- Abrolhos AMP (entrained hydrocarbon concentrations ≥100 ppb)

Tactical Response plans for these locations can be accessed via the Oil Spill Portal - Tactical Response Plans and include the details of potential forward operating bases and staging areas.

Oil Spill Trajectory Modelling specific to the spill event will be required to determine the regional sensitive receptors to be contacted beyond 48 hours of a spill.

Figure 3-1 illustrates the location of regional sensitive receptors in relation to the WA-61-L and WA-62-L Subsea Infrastructure Installation Operational Area and identifies priority protection areas.

Consideration should be given to other persons/ organisations (including mariners) in the vicinity of the spill location. There are no oil and gas facilities owned or operated by other petroleum titleholders located within 50 km of the Operational Area.

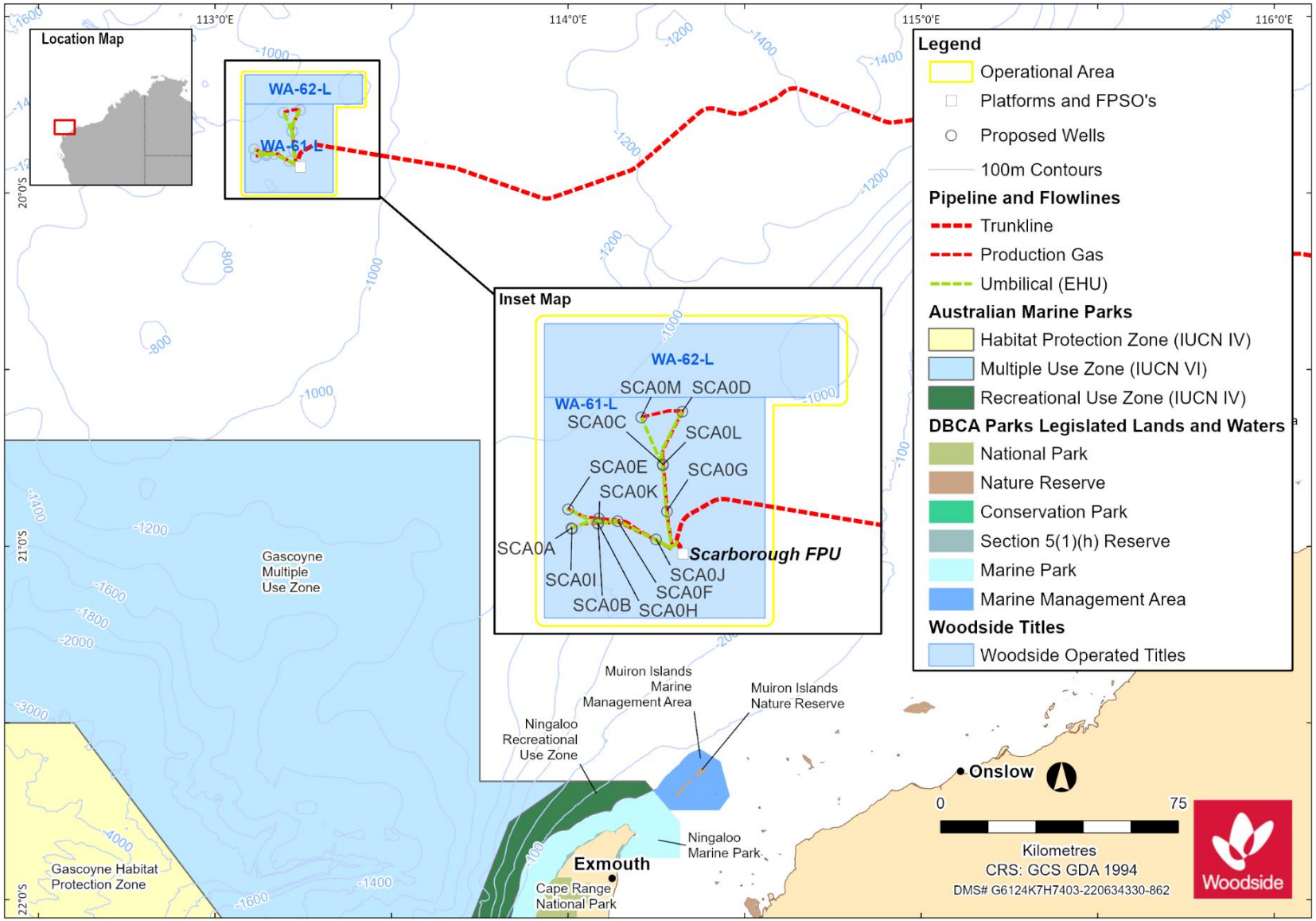


Figure 3-1: Regional sensitive receptors

4. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the WA-61-L and WA-62-L Subsea Infrastructure Installation 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	API gravity	Volume	Residue	Time to evaporation	Proportion of oil	Suggested ADIOS2 Analogue[2]
CS-01 (WCCS) **Unplanned hydrocarbon release caused by marine vessel collision (project vessel)**	Marine diesel	37.2°	1000 m^3 [3]	5% (50 m^3)	12 hours (BP < 180 °C)	6.0%	Diesel Fuel Oil (API 37.2°)
					24 hours (180 °C < BP < 265 °C)	34.6%	
					Several days (265 °C < BP < 380 °C)	54.4%	
CS-02 **Loss of containment caused by refuelling hose failure, coupling failure or operator error.**	Marine diesel	37.2°	55 m^3	5% (2.75 m^3)	12 hours (BP < 180 °C)	6.0%	Diesel Fuel Oil (API 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 an instantaneous surface release of 2000 m^3 MDO was available at the same field location. It was originally undertaken in 2019 and reprocessed in 2021 using NOPSEMA's contemporary modelling thresholds. The largest tank of the vessel proposed for the activity is circa 1000 m^3, 50% smaller than the modelled MDO volume (2000 m^3). Given that spill parameters and geographic location fall within the envelope of the existing MDO 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	[redacted]
2	NOPSEMA Incident Report Form	[redacted]
3	Marine Pollution Report (POLREP – AMSA)	[redacted]
4	AMOSC Service Contract	[redacted]
5	Marine Pollution Report (POLREP – DoT)	[redacted]
6a	OSRL Initial Notification Form	[redacted]
6b	OSRL Mobilisation Activation Form	[redacted]
7	RPS Response Oil Spill Trajectory Modelling Request	[redacted]
8	Aerial Surveillance Observer Log	[redacted]
9	Tracking buoy deployment instructions	[redacted]

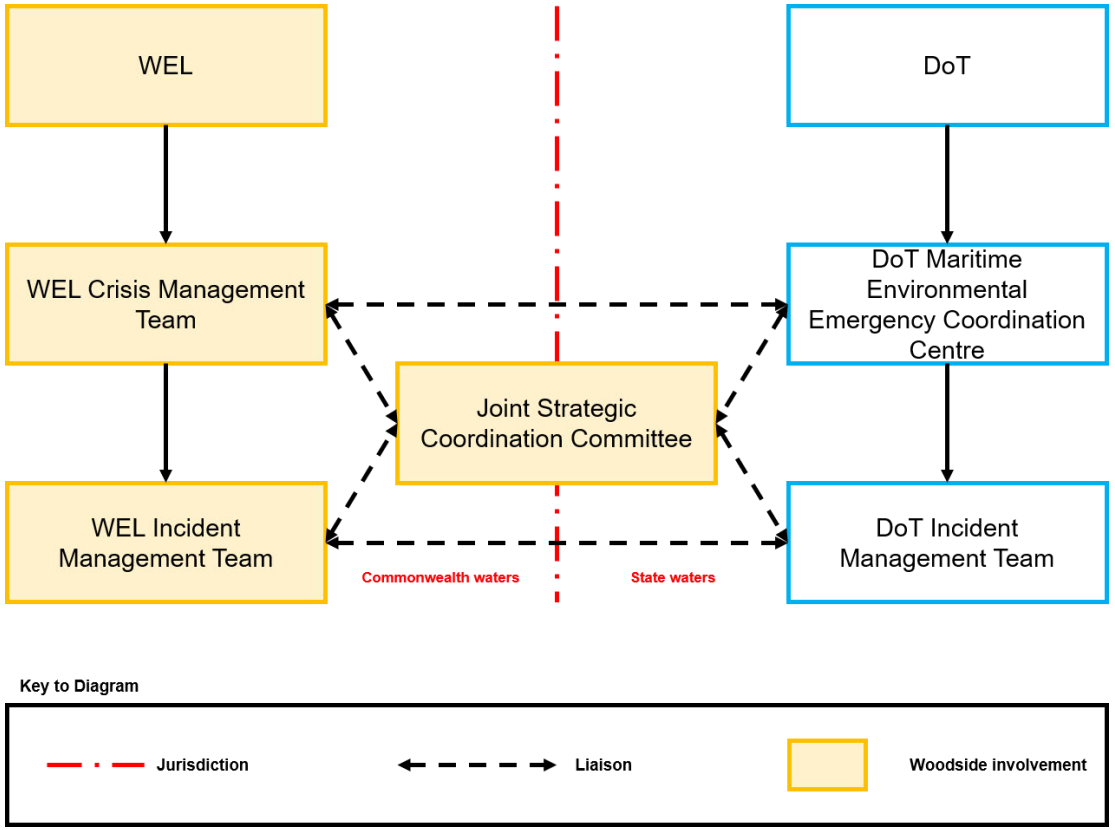
FORM 1 – RECORD OF INITIAL VERBAL NOTIFICATION TO NOPSEMA

NOPSEMA phone:		
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	[redacted]	
NOPTA	[redacted]	
DMIRS	[redacted]	

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]



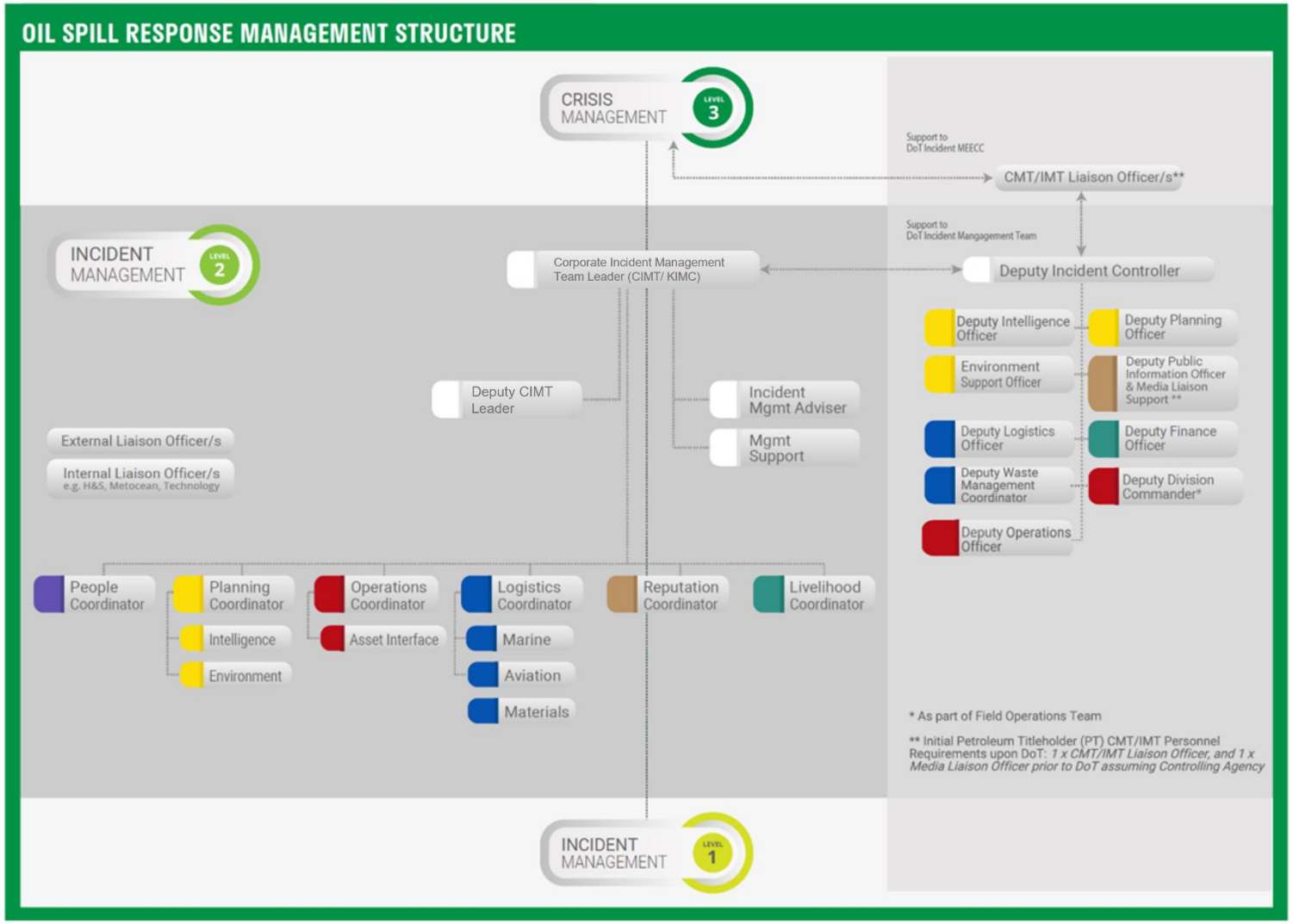
The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder).

The Control Agency/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).



APPENDIX F – WOODSIDE LIAISON OFFICER RESOURCES TO DOT

In the event that DoT is required to establish an IMT, Woodside will make available an appropriate number of appropriately qualified persons to work within the DoT IMT.

It is an expectation that Woodside's nominated CMT Liaison Officer and the Deputy Incident Controller attend the DoT Fremantle ICC as soon as possible after the formal request has been made by the SMEEC, and no later than 8am on the day following the request being formally made. 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 SMEEC.

Area	WEL Liaison Role	Personnel Sourced from[5]:	Key Duties	#
DoT Maritime Environmental Emergency Coordination Centre (MEECC)	CMT Liaison Officer	CIMT Leader Roster	• Provide a direct liaison between the CMT and the MEECC. • Facilitate effective communications and coordination between the CMT Leader and State Marine Pollution Coordinator (SMPC). • Offer advice to SMPC on matters pertaining to PT crisis management policies and procedures.	1
DoT IMT Incident Control	WEL Deputy Incident Controller	CIMT Leader Roster	• 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	Intelligence Support Officer/ Deputy Intelligence Officer	Intelligence Coordinator Roster	• As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness. • Facilitate the provision of relevant modelling and predications from the PT IMT. • Assist in the interpretation of modelling and predictions originating from the PT IMT. • Facilitate the provision of relevant situation and awareness information originating from the DoT IMT to the PT IMT.	1

[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/ KIMC roster arrangements, contact the WCC. During a prolonged response, additional personnel may be sourced through AMOSC Core Group via* [redacted]

Area	WEL Liaison Role	Personnel Sourced from[5]:	Key Duties	#
			• Facilitate the provision of relevant mapping from the PT IMT. • Assist in the interpretation of mapping originating from the PT IMT. • Facilitate the provision of relevant mapping originating from the DoT IMT to the PT IMT.	
DoT IMT Intelligence – Environment	Environment Support Officer	Environment Coordinator Roster	• As part of the Intelligence Team, assist the Environment Coordinator in the performance of their duties in relation to the provision of environmental support into the planning process. • Assist in the interpretation of the PT OPEP and relevant TRP plans. • Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the PT IMT. • Facilitate the provision of relevant environmental information and advice originating from the DoT IMT to the PT IMT.	1
DoT IMT Planning-Plans/ Resources	Deputy Planning Officer	Planning Coordinator Roster	• 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	Public Information Support and Media Liaison Officer/ Deputy Public Information Officer	Reputation Coordinator Roster	• As part of the Public Information Team, provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DoT Information and Warnings team.	1

Area	WEL Liaison Role	Personnel Sourced from[5]:	Key Duties	#
			• Offer advice to the DoT Media Coordinator on matters pertaining to PT media policies and procedures. • Facilitate effective communications and coordination between the PT and DoT Community Liaison teams. • Assist in the conduct of joint community briefings and events. • Offer advice to the DoT Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures. • Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT.	
DoT IMT Logistics	Deputy Logistic Officer	Logistics Coordinator Roster	• As part of the Logistics Team, assist the Logistics Officer in the performance of their duties in relation to the provision of supplies to sustain the response effort. • Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements. • Collects Request Forms from DoT to action via PT IMT. **(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)**	1
DoT IMT Finance-Accounts/ Financial Monitoring	Deputy Finance Officer	Livelihood Coordinator Roster	• 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	Operations Coordinator Roster	• 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

Area	WEL Liaison Role	Personnel Sourced from[5]:	Key Duties	#
DoT IMT Operations – Waste Management	Facilities Support Officer/ Deputy Waste Management Coordinator	Logistics Materials Coordinator Roster	• 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 On-Scene Commander/ Deputy Division Commander	CIMT Leader Roster	• As part of the Field Operations Team, assist the Division Commander in the performance of their duties in relation to the oversight and coordination of field operational activities undertaken in line with the IMT Operations Section's direction. • Provide a direct liaison between the PT FOB and DoT FOB. • Facilitate effective communications and coordination between the PT Division Commander and the DoT Division Commander. • Offer advice to the DoT Division Commander on matters pertaining to PT incident response policies and procedures. • Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors. • Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures.	1
			Total Woodside personnel initially required in DoT IMT	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	#
WEL CMT	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
WEL Reputation FST (Media Room)/ Public Information – Media	DoT Media Liaison Officer	DoT	• Provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DoT Information & Warnings team. • Offer advice to the PT Media Coordinator on matters pertaining to DoT and wider Government media policies and procedures.	1
			Total DoT Personnel Initial Requirement to Woodside	2

APPENDIX I: MASTER EXISTING ENVIRONMENT

Description of the Existing Environment

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1. INTRODUCTION

1.1 Purpose

This document applies, where indicated in the relevant Environment Plan, 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 Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 in order 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 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 Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for the marine bioregions (NWMR, SWMR and NMR) and the three PMST reports provided in **Appendix A**; State (WA)/Commonwealth Marine Park Management Plans, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Species Profile and Threats Database (SPRAT), 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, where relevant, on at least an annual basis to address any relevant changes, which includes but is not limited to the status of EPBC Act listed species, Part 13 Instruments, policies and guidelines 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—NWMR, SWMR and NMR (**Table 1-1)**. The NWMR is the focal marine bioregion for the Description of the Existing Environment as this is currently the location of most of Woodside's activities.

Table 1-1. Description of the Marine Bioregions

Marine Bioregion	Description
North-west	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 (NT) border to Kalbarri, south of Shark Bay in WA, covering an area of approximately 1.07 million square kilometres 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	The SWMR comprises Commonwealth waters from the eastern end of Kangaroo Island in SA to Shark Bay in WA. The region spans approximately 1.3 million square kilometres of temperate and subtropical waters and abuts the coastal waters of SA and WA.
North	The NMR comprises Commonwealth waters from west Cape York Peninsula to the NT/WA border). The region covers approximately 625,689 square kilometres of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas, and abuts the coastal waters of Queensland and the NT.

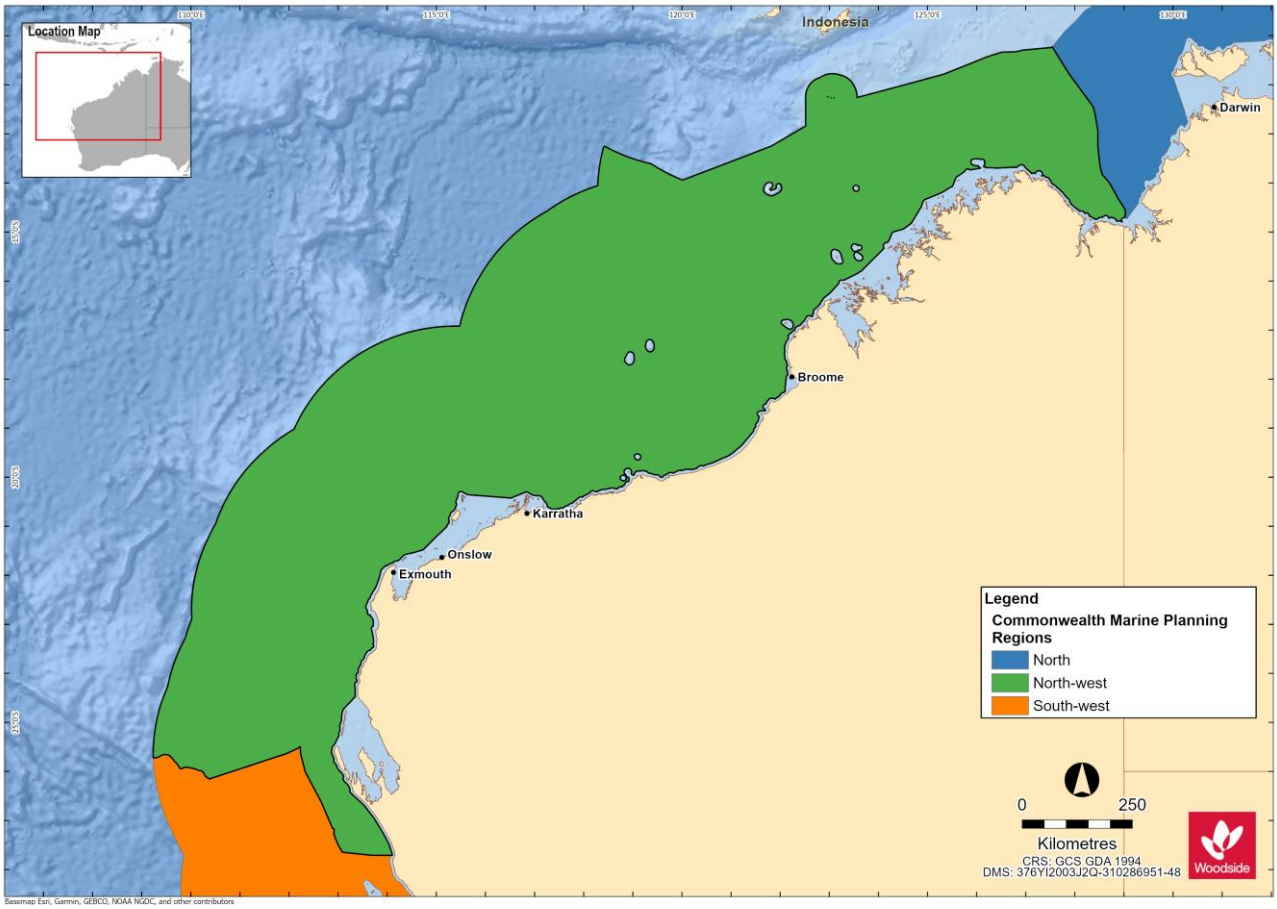

Figure 1-1. Marine Bioregions: North-west (NWMR), South-west (SWMR) and North (NMR)

2. PHYSICAL ENVIRONMENT

2.1 Regional Context

The key physical characteristics of the NWMR, SWMR and NMR are presented in **Table 2-1**.

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 can be 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 below in **Table 2-2**.

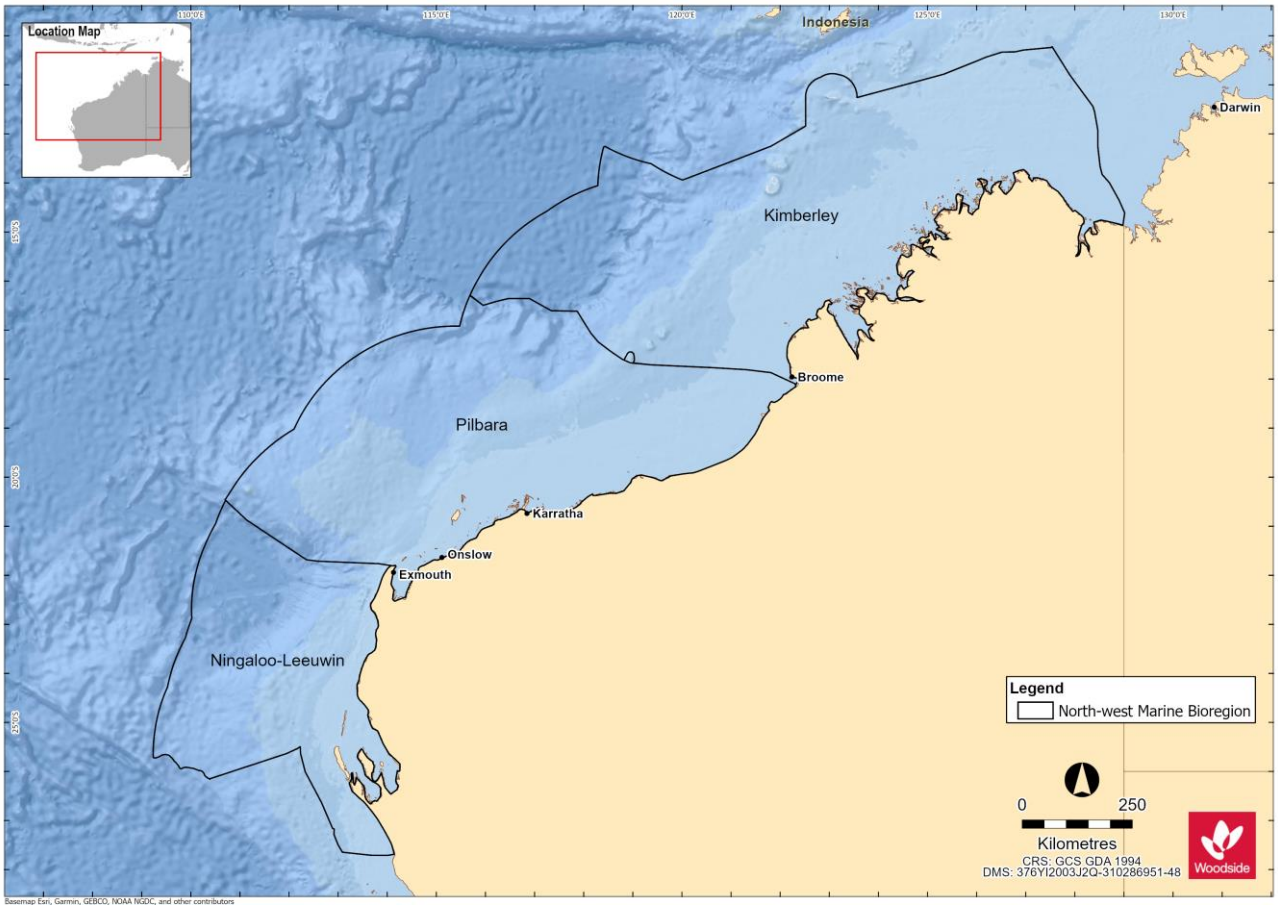

Figure 2-1. The marine systems of the North-west Marine Region (NWMR)

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. 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).

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 31ºC to 33ºC. During winter (May to July), mean daily temperatures range from 18ºC to 31ºC (BOM[1]), 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 2-3a** 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 ~17°C in winter to ~31°C in summer (Chevron Australia, 2010). Refer to **Figure 2-5a** and **b**.
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 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.

[1] http://www.bom.gov.au/jsp/ncc/climate_averages/temperature/index.jsp, accessed 21 January 2021.

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).

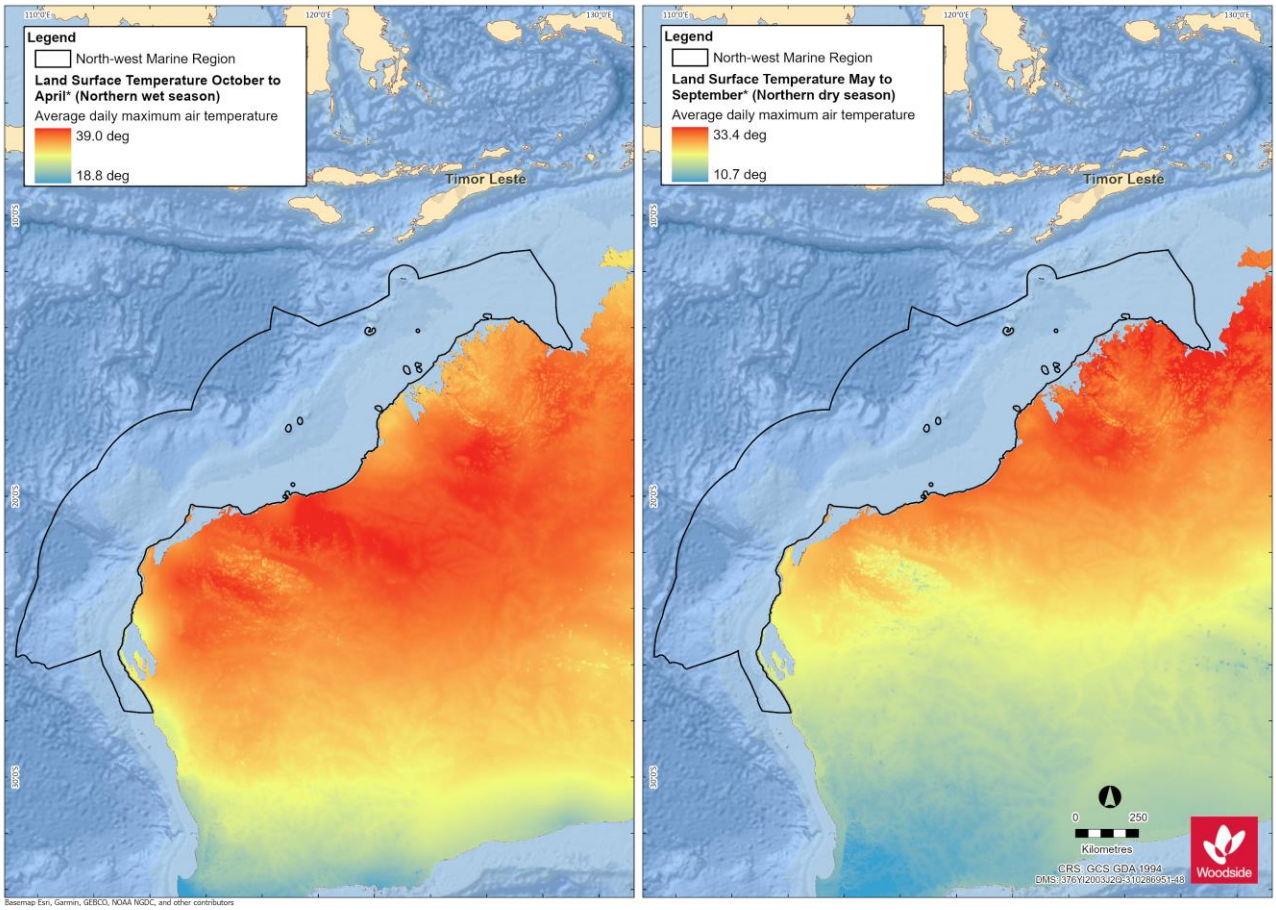

Figure 2-2. Average daily maximum air temperature for land surface adjacent to NWMR: (a) summer (northern wet season) and (b) winter (northern dry season)

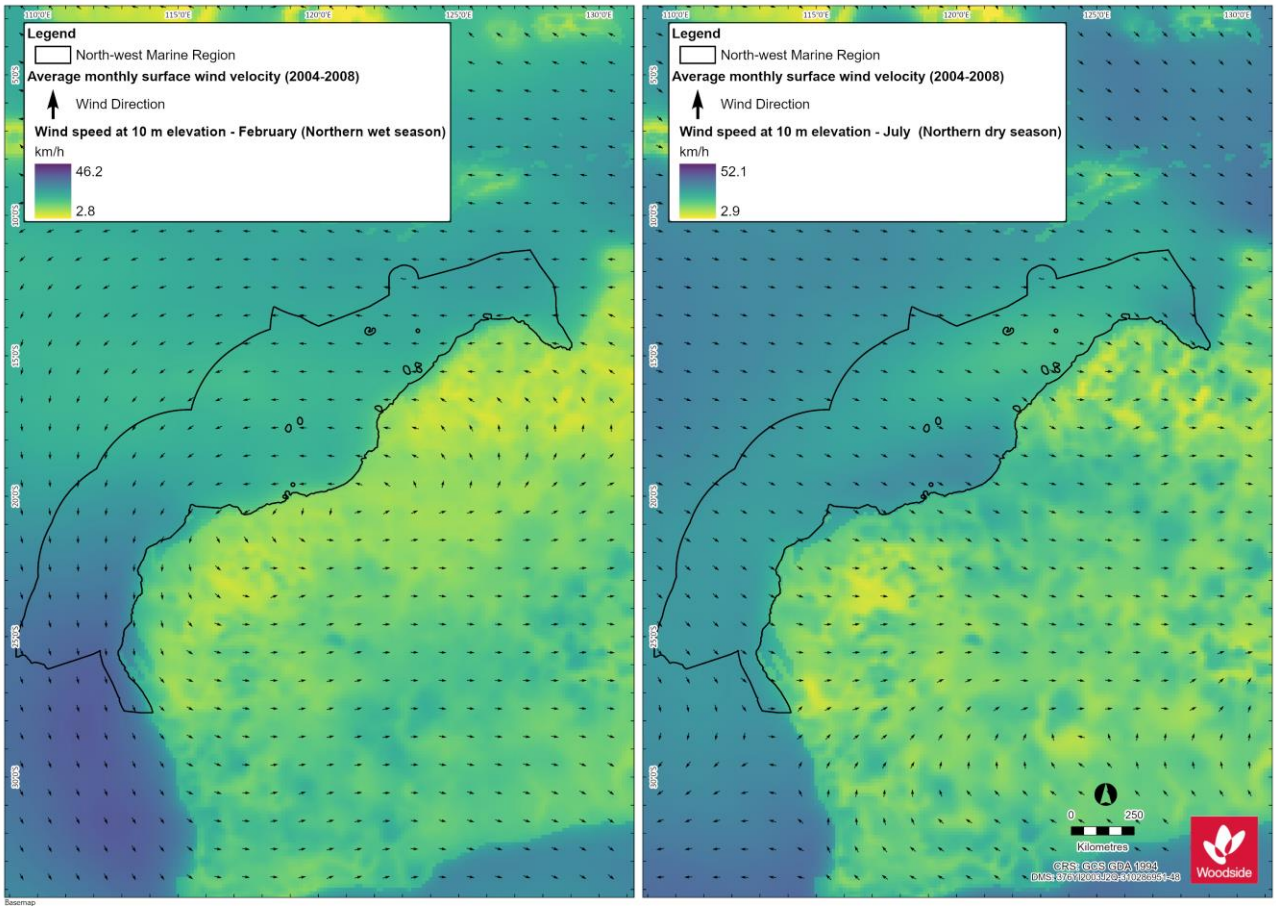

Figure 2-3. Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

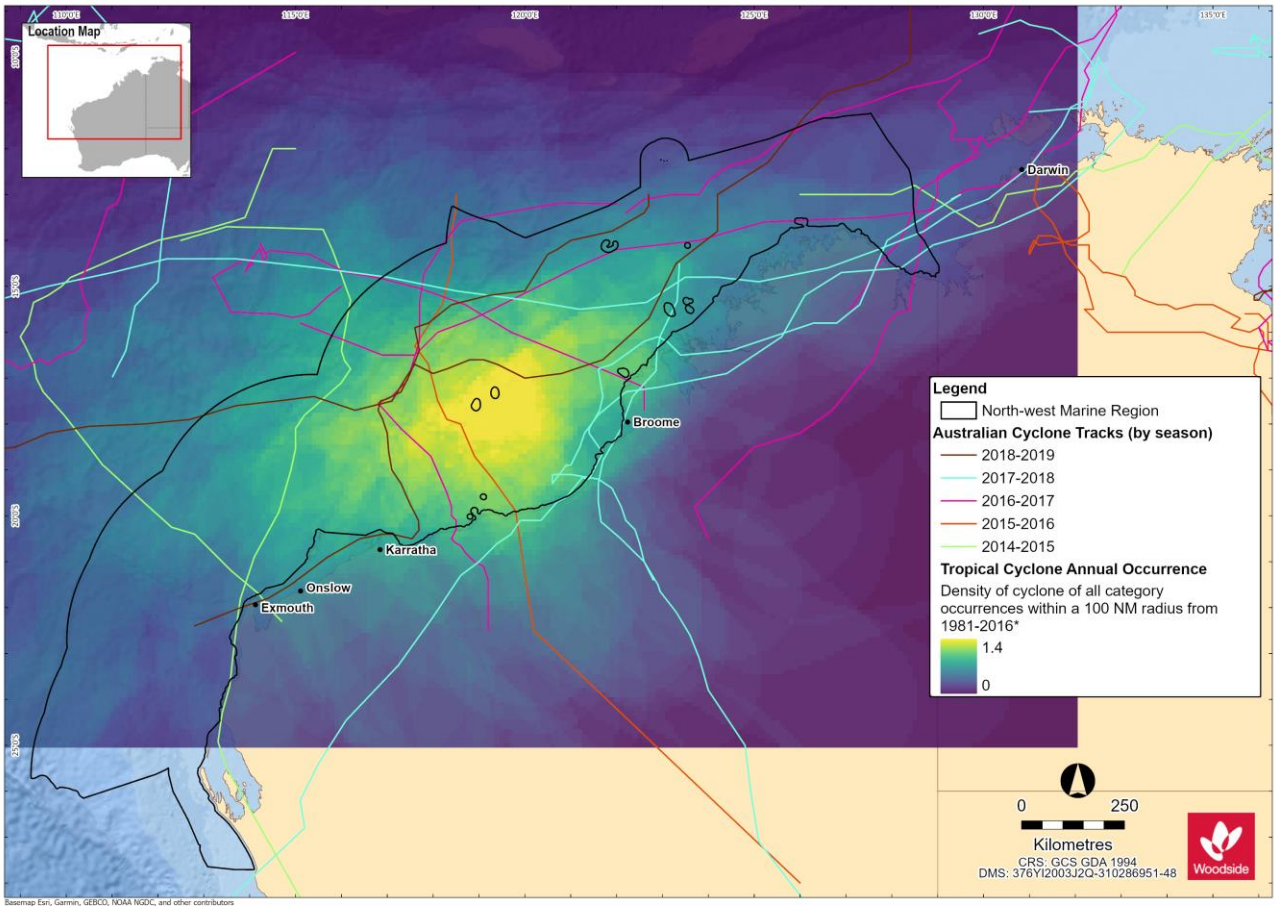

Figure 2-4. Tropical cyclone annual occurrence and cyclone tracks for NWMR

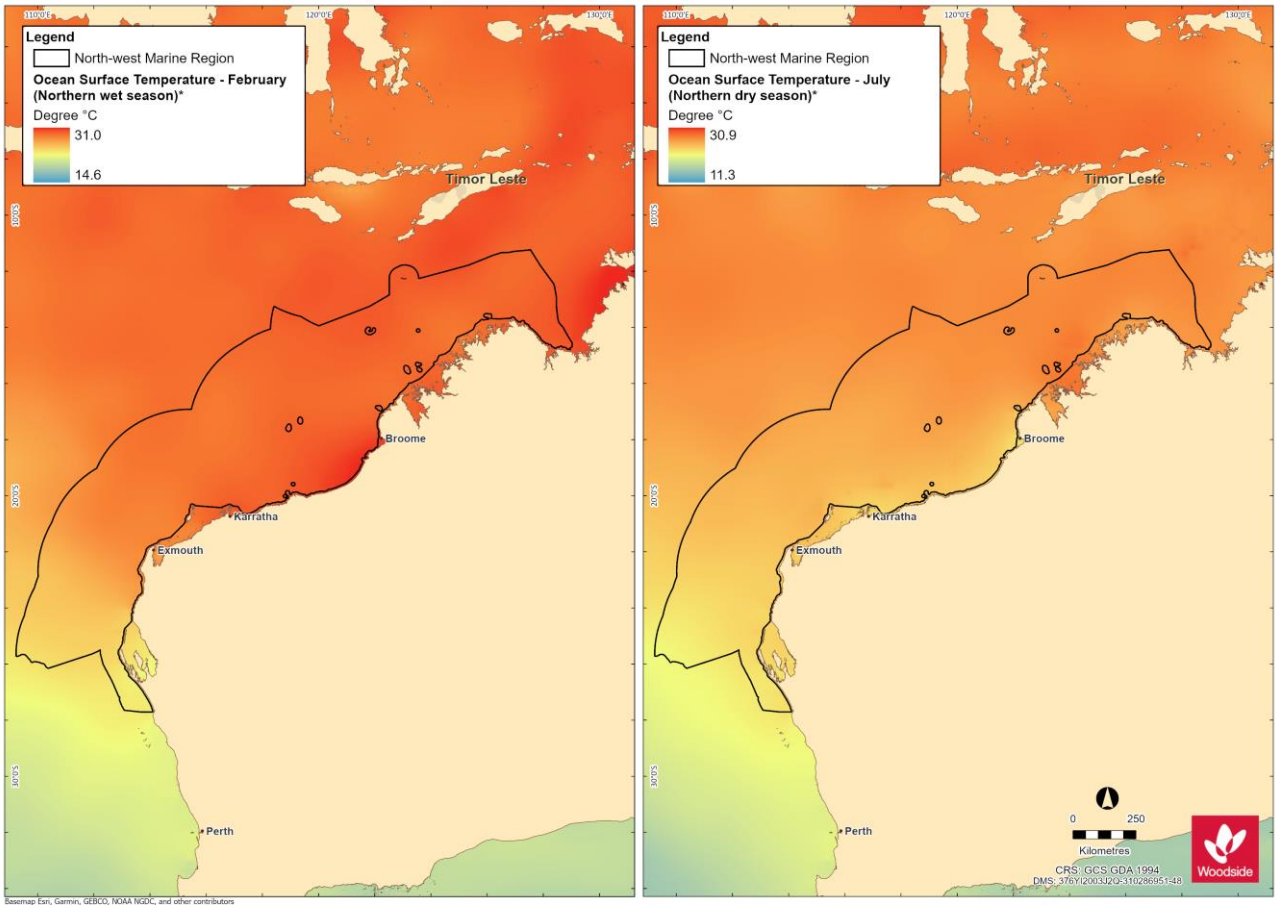

Figure 2-5. Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

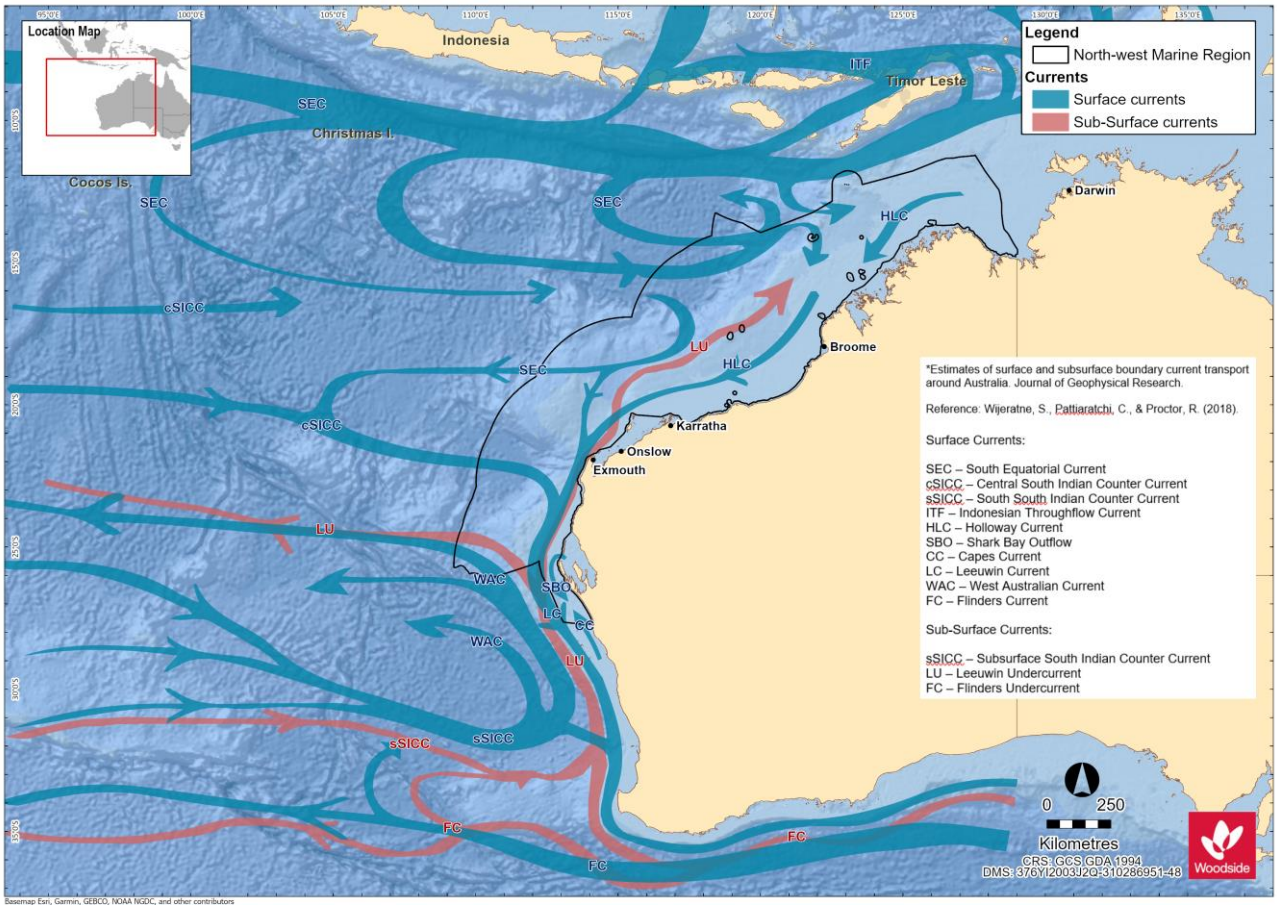

Figure 2-6. Ocean surface and sub-surface currents of the NWMR and wider region

2.3.1 Browse

Table 2-4 Summary meteorology and oceanography for Browse (refer to Appendix B for supporting metocean figures)

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 30.1ºC in 2011 to 32.6ºC in 2016 and highest mean monthly air temperatures were recorded for the months of November and December (BOM, 2021b).
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, 2021c).
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/hr and maximum wind gusts of 65 km/hr. In contrast the wet season brings predominately westerly winds with average wind speeds approximately 17 km/hr and maximum gusts exceeding 100 km/hr (generally associated with tropical cyclones (MetOcean Engineers, 2005).
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the south-west during March to June and more variable outside this period (Woodside, 2019). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.3.2 North West Shelf / Scarborough

Table 2-5 Summary meteorology and oceanography for the North West Shelf and Scarborough (refer to Appendix B for supporting metocean figures)

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 NWS ranged from a maximum average of 39.5ºC in summer to a minimum average temperature of 15.6ºC in winter (Woodside, 2012).
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).
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).
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 ITF 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 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 37.5ºC) and mild winter temperatures (minimum average of 12.2ºC).
Rainfall	Rainfall typically occurs during the summer, with highest rainfall during later summer and autumn, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall is typically low in winter.
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, 2016). 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 more than five kilometres. 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.

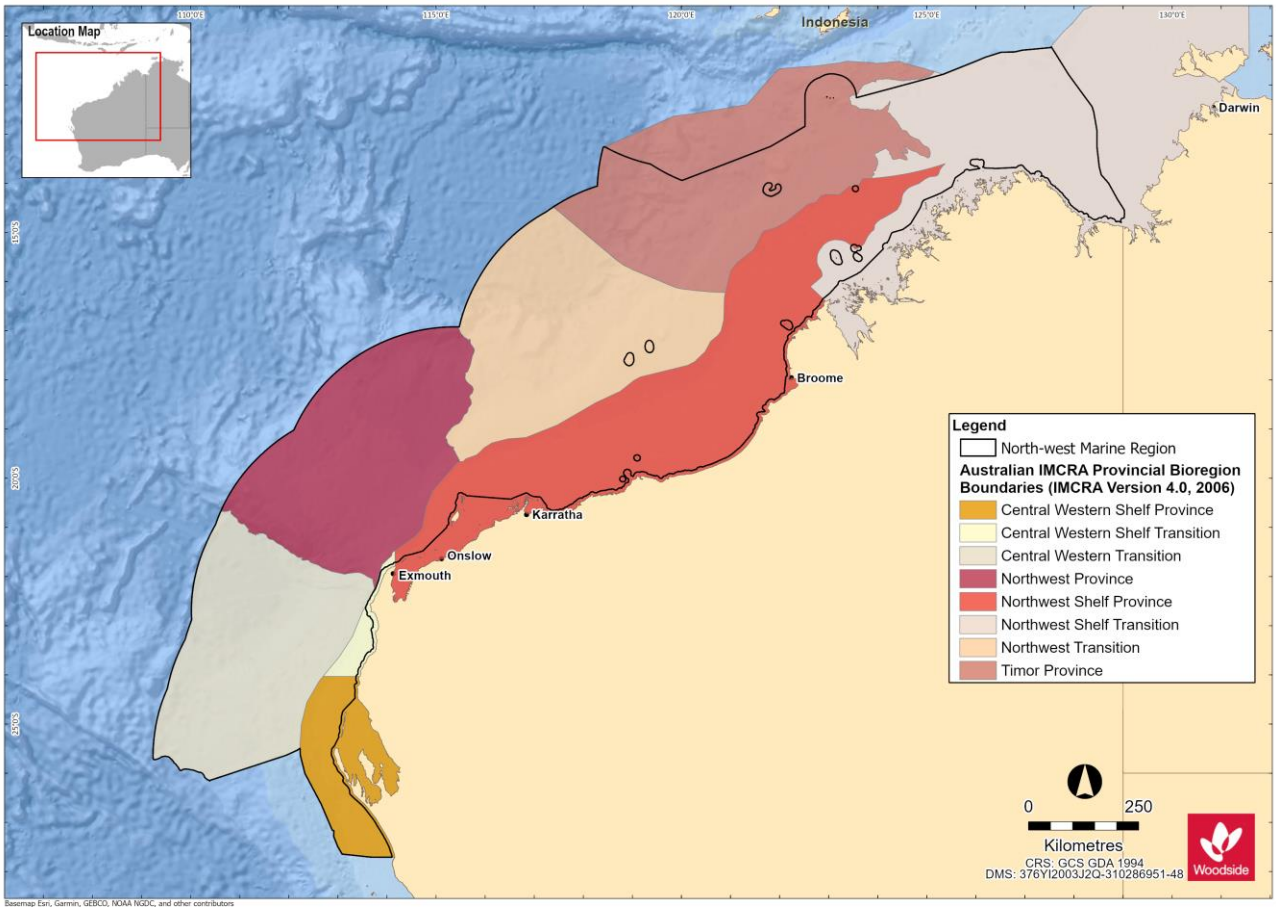

Figure 2-7. The eight provincial bioregions of the NWMR (Commonwealth of Australia, 2006)

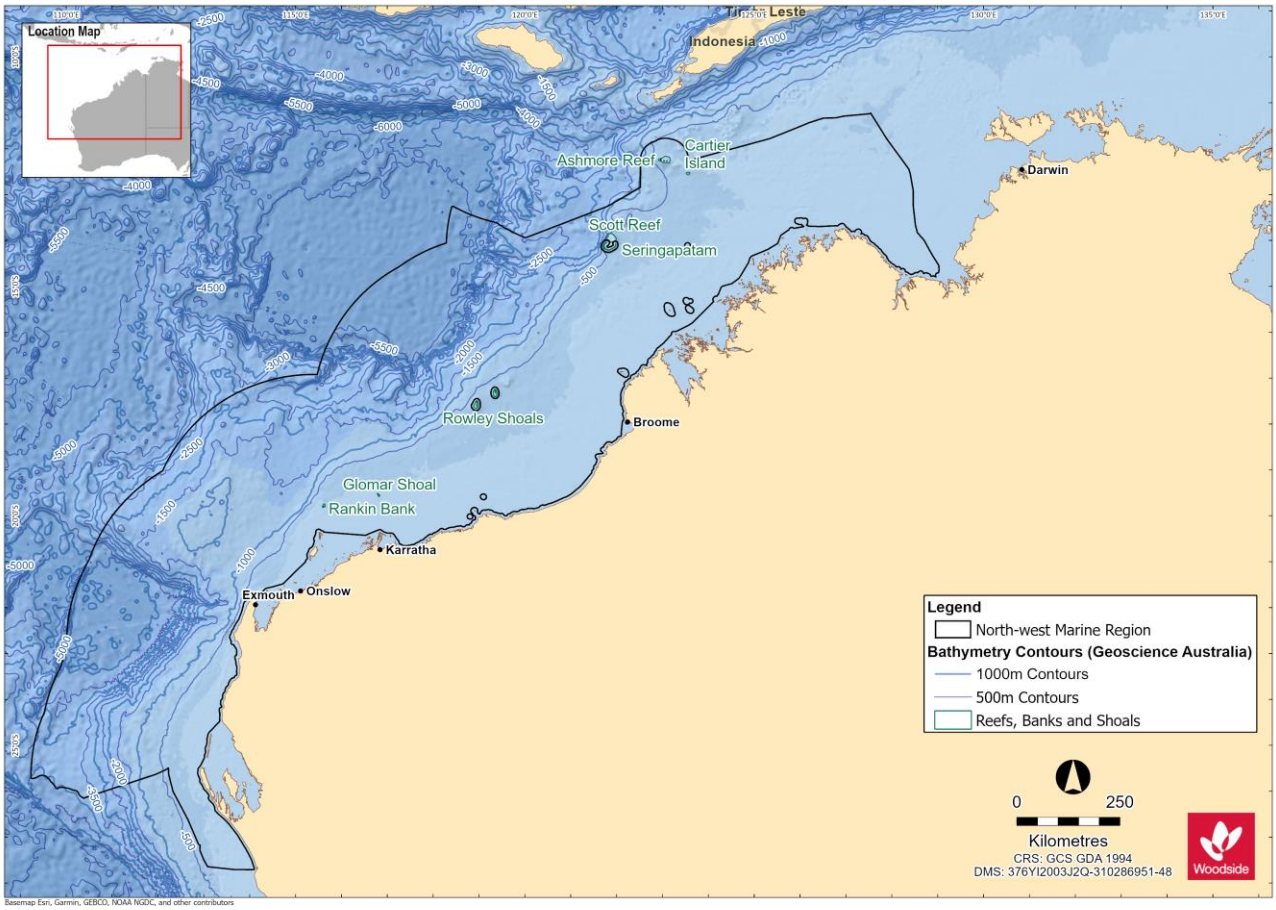

Figure 2-8. Bathymetry of the NWMR

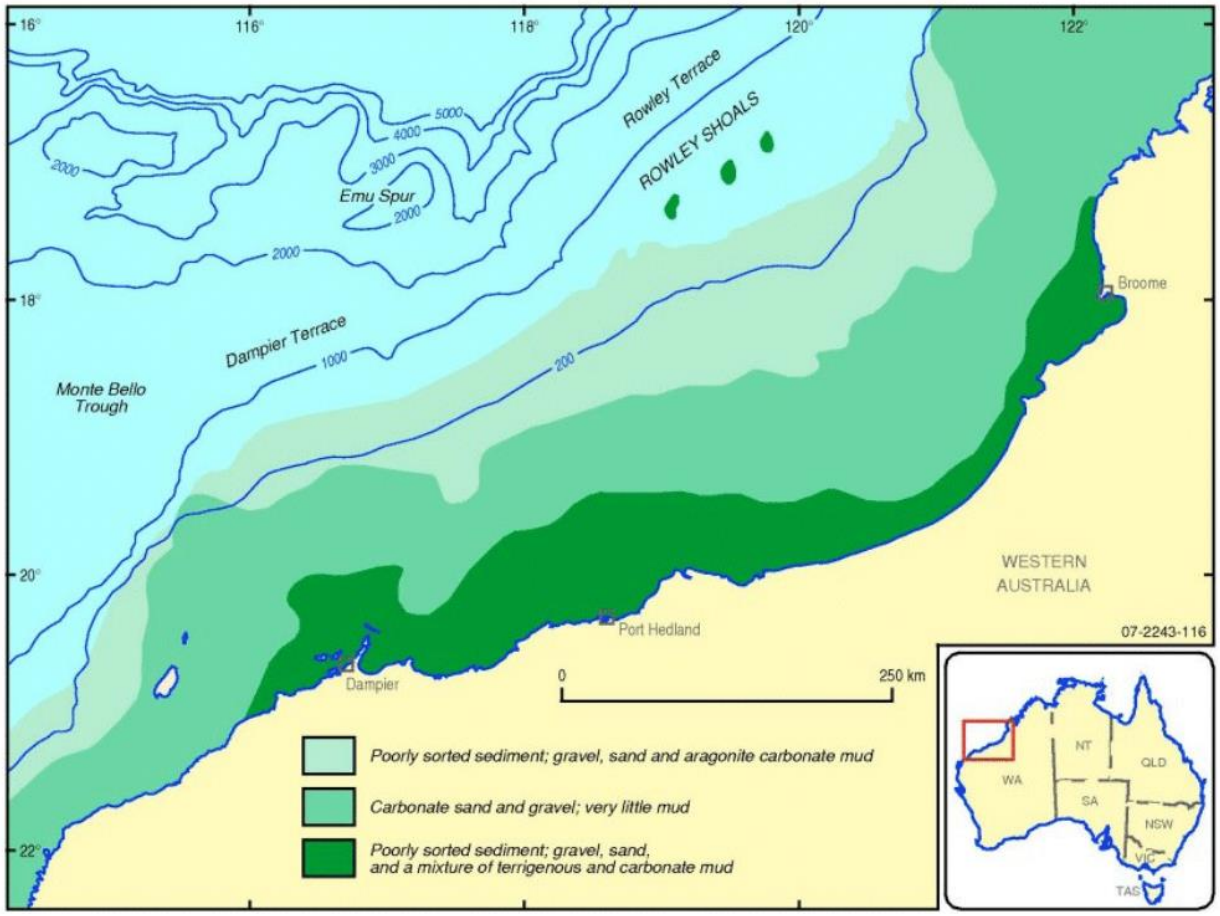

Figure 2-9. Overview of the seabed sediments of the NWMR (Baker *et al*., 2008)

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**).

Additional information on these MNES are provided in subsequent sections (referenced below).

Table 3-1 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the NWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	2	Shark Bay The Ningaloo Coast	**Section 10**
National Heritage Places	5	Shark Bay The Ningaloo Coast The West Kimberley The Dampier Archipelago (including Burrup Peninsula) Dirk Hartog Landing Site 1616	**Section 10**
Wetlands of International Importance (Ramsar)	3	Ashmore Reef National Nature Reserve Eighty Mile Beach Roebuck Bay[1]	**Section 10**
Commonwealth Marine Area	2	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 9** **Section 10**
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	70	Refer NWMR PMST report (**Appendix A**)	**Section 5 – Section 8**
Listed Migratory Species	84	Refer NWMR PMST report (**Appendix A**)	**Section 5 – Section 8**

[1] *Roebuck Bay is a designated Wetland of International Importance (Ramsar site), which was not included in the PMST Report (**Appendix A**).*

Table 3-2 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the SWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	0	N/A	N/A
National Heritage Places	3	Cheetup Rock Shelter Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos HMAS Sydney II and HSK Kormoran Shipwreck Sites	**Section 10**
Wetlands of International Importance (Ramsar)	4	Becher Point Wetlands Forrestdale and Thomsons Lakes Peel-Yalgorup System Vasse-Wonnerup System	**Section 10**
Commonwealth Marine Area	2	EEZ and Territorial Sea KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	**Section 9** **Section 10**
Listed Threatened Ecological Communities	3	Banksia Woodlands of the Swan Coastal Plain ecological community Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community	Terrestrial communities and not considered further
Listed Threatened Species	65	Refer SWMR PMST report (**Appendix A**)	N/A
Listed Migratory Species	67	Refer SWMR PMST report (**Appendix A**)	N/A

Table 3-3 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as 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 Area	2	EEZ and Territorial Sea KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	**Section 9** **Section 10**
Listed Threatened Ecological Communities	0	N/A	N/A
Listed Threatened Species	33	Refer NMR PMST report (**Appendix A**)	N/A
Listed Migratory Species	70	Refer NMR PMST report (**Appendix A**)	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, using the following criteria:

- overlap between the Woodside activity areas with habitat critical for the survival of marine turtles, and with BIAs (overlapping the marine environment) for any listed threatened 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 behaviours (e.g. breeding, nesting, calving, resting, foraging, migration); and
- environmental aspects associated with petroleum activities 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 EPBCA Act listed species for each marine bioregion refer to the PMST reports (**Appendix A**).

Table 3-4 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) 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	Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2011–2021 (DSEWPAC, 2012d)
Sei whale	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Humpback whale	Conservation Advice *Megaptera novaeangliae* humpback whale (Threatened Species Scientific Committee, 2015b)
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) (due to expire in October 2023) 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)
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)

Species	EPBC Act Part 13 Statutory Instrument
Seabirds	
Migratory seabird species	Draft Wildlife Conservation Plan for Migratory Seabirds (Commonwealth of Australia, 2019)
Southern giant petrel	National recovery plan for threatened albatrosses and giant petrels 2011–2016 (DSEWPAC, 2011c)
Indian yellow-nosed albatross	National recovery plan for threatened albatrosses and giant petrels 2011–2016 (DSEWPAC, 2011c)
Abbott's booby	Conservation Advice for the Abbott's booby - *Papasula abbotti* (Threatened Species Scientific Committee, 2020b)
Australian fairy tern	Approved Conservation Advice for *Sterna nereis nereis* (Fairy Tern) (DSEWPAC, 2011d)
Australian lesser noddy	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee, 2015e)
Soft-plumaged petrel	Conservation Advice *Pterodroma mollis* soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
Shorebirds	
Migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c)
Eastern curlew, far eastern curlew	Conservation Advice *Numenius madagascariensis* eastern curlew (DOE, 2015a)
Curlew sandpiper	Conservation Advice *Calidris ferruginea* curlew sandpiper (DOE, 2015b)
Great knot	Conservation Advice *Calidris tenuirostris* Great knot (Threatened Species Scientific Committee, 2016a)
Red knot, knot	Conservation Advice *Calidris canutus* Red knot (Threatened Species Scientific Committee, 2016b)
Bar-tailed godwit (*menzbieri*)	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (Threatened Species Scientific Committee, 2016c)
Greater sand plover	Conservation Advice *Charadrius leschenaultii* Greater sand plover (Threatened Species Scientific Committee, 2016d)
Lesser sand plover	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threatened Species Scientific Committee, 2016e)

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 and 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) play a role in making nutrients available in the photic zone. 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. Within the Pilbara system of the NWMR (approximately equates to the NWS / Scarborough activity area). Internal tides along the NWS and Exmouth Plateau result in the drawing of deeper cooler waters into the photic zone, stirring up nutrients and triggering primary productivity. Broadly the greatest productivity within this sub-system is found around the 200 m isobath associated with the shelf break.

4.3.3 North-west Cape

Waters of the North-west Cape experience a relatively high diversity of phytoplankton groups including diatoms, coccolithophorids and dinoflagellates. During the warmer months blooms of *Trichodesmium* occur in the region, these have been observed particularly on the frontal systems around Point Murat (Heyward *et al*., 2000).

Average Leeuwin Current phytoplankton biomass is characteristic of low productivity oceanic waters like the Indian, Pacific and Atlantic Oceans (Hanson *et al.*, 2005). However, the Canyons linking the Cuvier Abyssal Plain and Cape Range Peninsula KEF are connected to the Commonwealth waters adjacent to Ningaloo Reef, and may also have connections to Exmouth Plateau. The canyons are thought to interact with the Leeuwin Current to produce eddies inside the heads of the canyons, resulting in waters from the Antarctic intermediate water mass being drawn into shallower depths and onto the shelf (Brewer *et al.* 2007). These waters are cooler and richer in nutrients and strong internal tides may also aid upwelling at the canyon heads (Brewer *et al.* 2007). The narrow shelf width (about 10 kilometres) 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 coral reefs and limestone pavement.

The key habitats and biological communities 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**.

4.4.2 Shoreline habitats and biological communities

The NWMR encompasses offshore and coastal waters, islands and mainland shoreline habitats typified by mangroves, tidal flats, saltmarshes, 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.

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**.

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 9**
	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 9**
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 10**
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 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 10**
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 10**

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
	systems such as Scott Reef	Ancient coastline at 125 m depth contour KEF		
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 10**
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 10**
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 10**
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 are 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	
Saltmarshes	Saltmarshes 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	
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	

Table 4-2 Habitats within the SWMR

Habitat/Community	Location
Offshore	
Soft sediment with infauna	Most of the SWMR seafloor is composed of soft unconsolidated sediments, but due to large variations in bathymetry there are marked differences in sedimentary composition and benthic assemblage structure across the region. Despite the prevalence of these habitats in the SWMR, very little is known about the composition or distribution of the region's sedimentary infauna (DEWHA, 2008b)
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments.
	Perth Canyon Marine Park Ancient coastline at 90-120 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

Habitat/Community	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 is 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 live in 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 fish fauna in the NWMR is diverse. 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 11**.

Table 5-1 outlines the threatened and migratory fish species that may occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice. **Table 5-2** provides information for species of fish that are listed as conservation dependent that may occur within the NWMR, NMR and SWMR. Note that currently there are no approved Conservation Advices in place for any of these five species.

Table 5-1 Fish species (including sharks and rays) identified by the EPBC Act PMST for the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Rhincodon typus	Whale shark	Vulnerable	Migratory	Marine	Other specially protected fauna	Conservation Advice *Rhincodon typus* whale shark. (Threatened Species Scientific Committee, 2015d)
Carcharias taurus	Grey nurse shark (west coast population)	Vulnerable	N/A	Marine	Vulnerable	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) (DOE, 2014a)
Carcharodon carcharias	White shark	Vulnerable	Migratory	Marine	Vulnerable	Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPAC, 2013b)
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Marine	N/A	N/A
Isurus paucus	Longfin mako	N/A	Migratory	Marine	N/A	N/A
Lamna nasus	Porbeagle shark Mackerel shark	N/A	Migratory	Marine	N/A	N/A
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	N/A
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Marine	N/A	N/A
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Marine	Priority	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
Pristis pristis	Largetooth (Freshwater) sawfish	Vulnerable	Migratory	Marine	Priority	
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Marine	Vulnerable	
Glyphis garricki	Northern river shark	Endangered	N/A	Marine	Priority	
Manta alfredi	Reef manta ray	N/A	Migratory	Marine	N/A	N/A
Manta birostris	Giant manta ray	N/A	Migratory	Marine	N/A	N/A

Table 5-2 EPBC Act listed Conservation Dependent species of fishes and sharks that may occur in the NWMR, NMR and SWMR

Species Name	Common Name	Likely Occurrence / Distribution	Listing Advice
Hoplostethus atlanticus	Orange roughy, Deep-sea perch, Red roughy	SWMR	No conservation listing advice for this species. Refer to the Marine bioregional plan for the SWMR (DSEWPAC, 2012b) for further information
Thunnus maccoyii	Southern bluefin tuna	NWMR and SWMR	Threatened Species Scientific Committee (2010)
Sphyrna lewini	Scalloped hammerhead	NWMR, NMR and SWMR	Threatened Species Scientific Committee (2018)
Centrophorus zeehaani	Southern dogfish, Endeavour dogfish, Little gulper shark	SWMR	Threatened Species Scientific Committee (2013)
Galeorhinus galeus	School shark, Eastern school shark, Snapper shark, Tope, Soupfin shark	SWMR	Threatened Species Scientific Committee (2009)

5.2 Protected Sharks, Sawfishes and Rays in the NWMR

The EPBC Act Protected Matters search (**Appendix A**) identified seven species of shark and five species of river shark or sawfish listed as threatened and/or migratory within the NWMR. In addition, two species of ray (the reef manta ray and giant manta ray) are listed as migratory within the region (refer **Table 5-2**).

5.2.1 Sharks and Sawfishes

The shark species known to occur within the NWMR include: the whale shark, grey nurse shark, white shark, shortfin mako, and longfin mako (**Table 5-2**).

Five species of river shark or sawfish known to occur in the NWMR and include: the narrow sawfish, northern river shark, freshwater sawfish, green sawfish and dwarf sawfish (**Table 5-2**).

There are identified BIAs within the NWMR for the whale shark, freshwater sawfish, green sawfish, and dwarf sawfish (refer **Section 5.3.2**).

Table 5-2 Information on the threatened shark and sawfish species 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, both oceanic and coastal (Last and Stevens, 2009). The species is widely distributed in Australian waters. Diet: Whale sharks are planktivorous sharks and feed on a variety of planktonic organisms 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). Refer **Table 5-3** for the BIA summary for the whale shark.
Grey nurse shark (west coast population)	Preferred habitat: Most commonly 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). 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.

Species	Preferred Habitat and Diet	Habitat Location
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 in length) feed primarily on teleost and elasmobranch fishes, broadening their diet as larger sharks to include marine mammals (Last and Stevens, 2009).	There are no known aggregation sites for white sharks in the NWMR, and this species is most often found south of North-west Cape, in low densities (DSEWPAC, 2012a). Given the migratory nature of the species, most likely has a broad 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). 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, 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 oceanic distribution in tropical and temperate seas (Mollet *et al.*, 2000). 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). 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 on the NWS in the 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. Target 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, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.

Species	Preferred Habitat and Diet	Habitat Location
Narrow sawfish	Preferred habitat[1]: Shallow coastal, estuarine, and riverine habitats, however it may occur in waters up to 40 m deep (D'Anastasi *et al.*, 2013). Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	Shallow coastal waters of the Pilbara and Kimberly coasts (Last and Stevens, 2009).
Northern river shark	Preferred habitat[1]: Rivers, tidal sections of large tropical estuarine systems and macrotidal embayments, as well as inshore and offshore marine habitats (Pillans *et al.*, 2009; Thorburn and Morgan, 2004). Adults have been recorded only in marine environments. Juveniles and sub-adults have been recorded in freshwater, estuarine and marine environments (Pillans *et al.*, 2009). Diet: Variety of fish and crustaceans (Stevens *et al.*, 2005)	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).	Refer **Table 5-3** for the BIA summary for the 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). Diet: Schools of baitfish and prawns (Poganoski *et al.*, 2002), molluscs and small crustaceans (Cliff and Wilson, 1994).	Refer **Table 5-3** for the BIA summary for the green sawfish.
Dwarf sawfish	Preferred habitat[1]: Shallow (2 to 3 m) silty coastal waters and estuarine habitats, occupying relatively restricted areas and moving only small distances (Stevens *et al.*, 2008) Diet: Shoaling fish such as mullet, molluscs, and small crustaceans (Cliff and Wilson, 1994).	Refer **Table 5-3** 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 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 5-3 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). 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	The Ningaloo Coast is an important area for giant manta rays from March to August (Preen *et al.*, 1997).

Species	Preferred Habitat and Diet	Habitat Location
	to be seasonal visitors to coastal or offshore sites including offshore island groups, offshore pinnacles and seamounts (Marshall *et al.*, 2011). Diet: Feed on planktonic organisms including krill and crab larvae.	No BIAs identified for NWMR.

5.3 Fish, Shark and Sawfish Biological Important Areas in the NWMR

A review of the National Conservation Values Atlas identified Biologically Important Areas (BIAs) for four species of shark and sawfish (whale shark, freshwater sawfish, green sawfish and dwarf sawfish) within the NWMR. The BIAs for the whale shark and the sawfish species include foraging, nursing and pupping areas. These are described in **Table 5-4**.

Table 5-4 Fish, whale shark and sawfish BIAs within the NWMR

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Pupping	Nursing	Foraging
Whale shark	✓	✓	✓	No pupping BIA identified within the NWMR	No nursing BIA identified within the NWMR	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	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	Nursing (likely) in King Sound Roebuck Bay (Jan – May)	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	Foraging in King Sound Foraging in Camden Sound Foraging in waters adjacent to Eighty Mile Beach

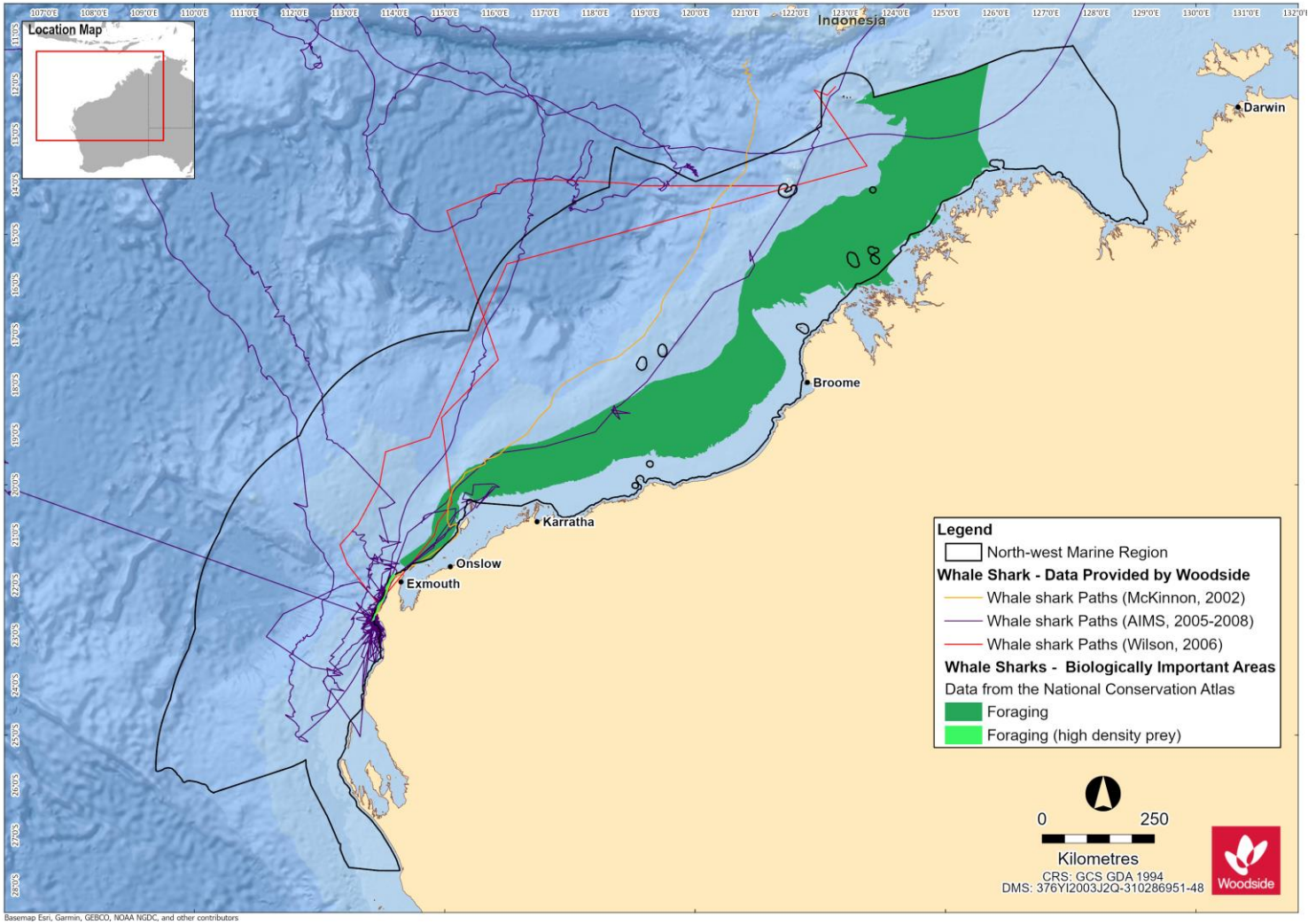

Figure 5-1 Whale shark BIAs for the NWMR and tagged whale shark tracks

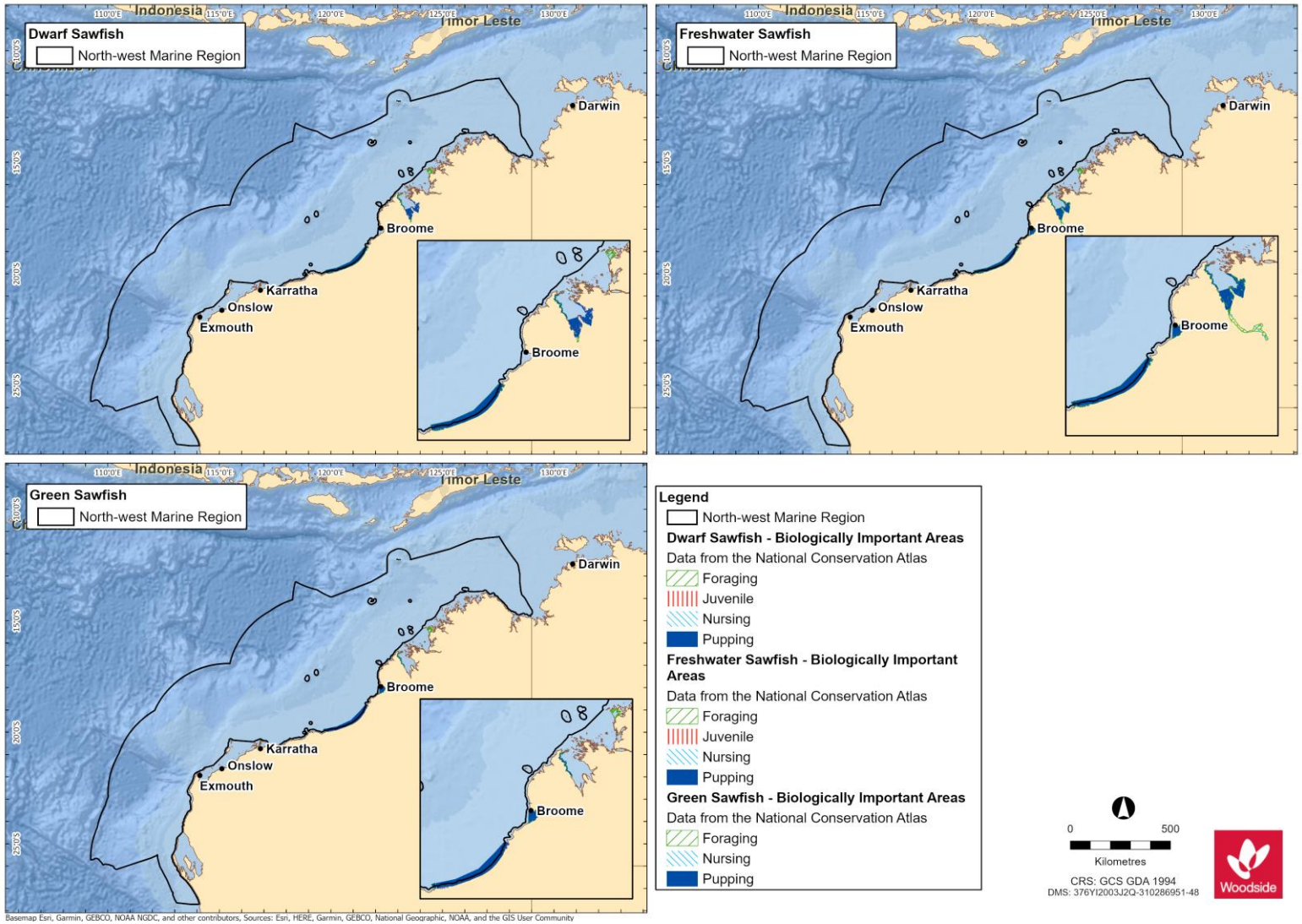

Figure 5-2 Sawfish BIAs for the NWMR

5.4 Fish Assemblages of the NWMR

5.4.1 Regional Context for Fish Assemblages of NWMR

The NWMR contains a diverse range of fishes of tropical Indo-west Pacific affinity (Allen *et al.*, 1988). The region is characterised by the highest level of endemism and species diversity compared with other areas of the Australian continental slope. Last *et al.* (2005) recorded 1431 species from the three bioregions encompassing the continental slope, whilst also acknowledging some information gaps.

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, only 26 possibly being endemic. The continental slope demersal fish assemblages of the NWMR have been identified as a KEF (DEWHA, 2008), as described in **Section 9**.

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 44 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**).

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 – Nov),
- 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 5-4** and **Figure 5-1**.

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 – Nov),
- 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 5-4** and **Figure 5-1**.

The NWS / Scarborough activity area has partial overlap with the Continental slope demersal fish communities KEF. The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last *et al.*, 2005).

5.4.5 North-west Cape

The North-west Cape activity area includes biologically important foraging habitat for the whale shark:

- whale shark, including:
  - Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July); and
  - Foraging northward from Ningaloo along the 200 m isobath (July – Nov).

BIAs for the whale shark are outlined in **Table 5-4** and **Figure 5-1**.

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.

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. Nineteen (19) listed sea snake species are known to occur in the NMR, as reported in the Protected Matters search (**Appendix A**).

There are significantly fewer marine reptile species that frequently occur within the SWMR and presently include three species of listed marine turtle and one sea snake species. Other species of sea snake may occur because of the southward-flowing Leeuwin Current, as vagrants in the region (DSEWPAC, 2012b).

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 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 as potentially occurring within or utilising habitats in the NWMR for key life cycle stages

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Marine	Endangered	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017)
Chelonia mydas	Green turtle	Vulnerable	Migratory	Marine	Vulnerable	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Marine	Vulnerable	
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Marine	Vulnerable	
Natator depressus	Flatback turtle	Vulnerable	Migratory	Marine	Vulnerable	
Lepidochelys olivacea	Olive ridley turtle	Endangered	Migratory	Marine	Vulnerable	
Aipysurus apraefrontalis	Short-nosed sea snake	Critically endangered	N/A	Marine	Critically endangered	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	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Crocodylus porosus	Salt-water crocodile	N/A	Migratory	Marine	Other protected fauna	N/A

6.2 Marine Turtles in the NWMR

According to the Protected Matters search (**Appendix A**) six species of marine turtle known to occur within the NWMR are listed as threatened and migratory (three Vulnerable and three Endangered) under the EPBC Act—the green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), flatback (*Natator depressus*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtle (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.

Three marine turtle species; the green, loggerhead, 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. Majority of their lives are spent in the ocean, but the adult female marine turtles will come 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).

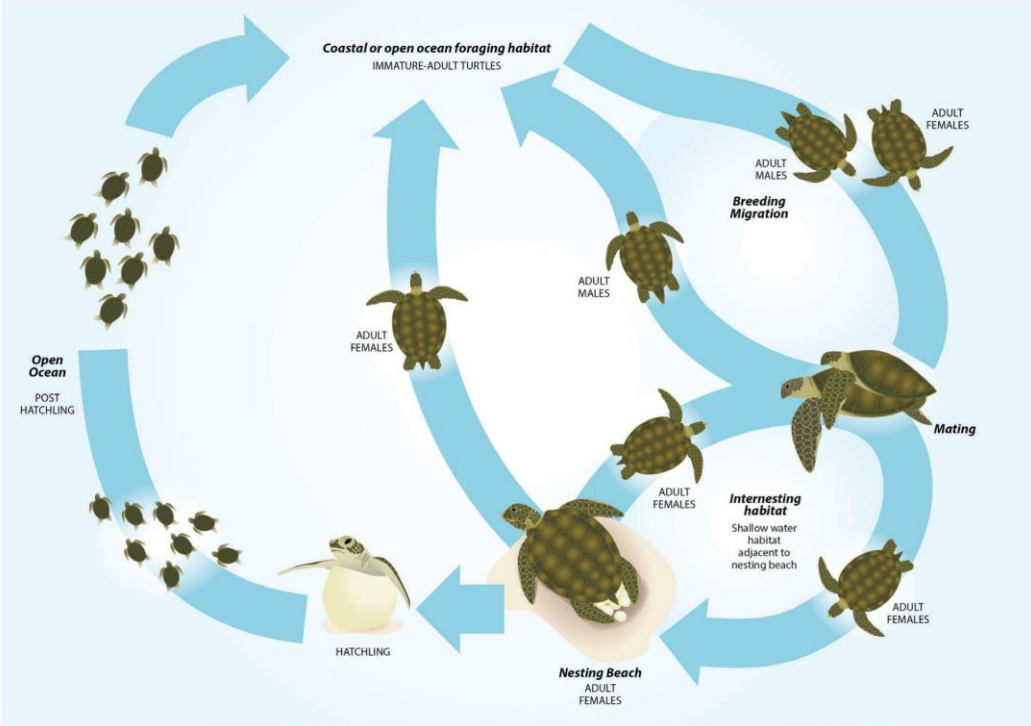

Figure 6-1 Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

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)*

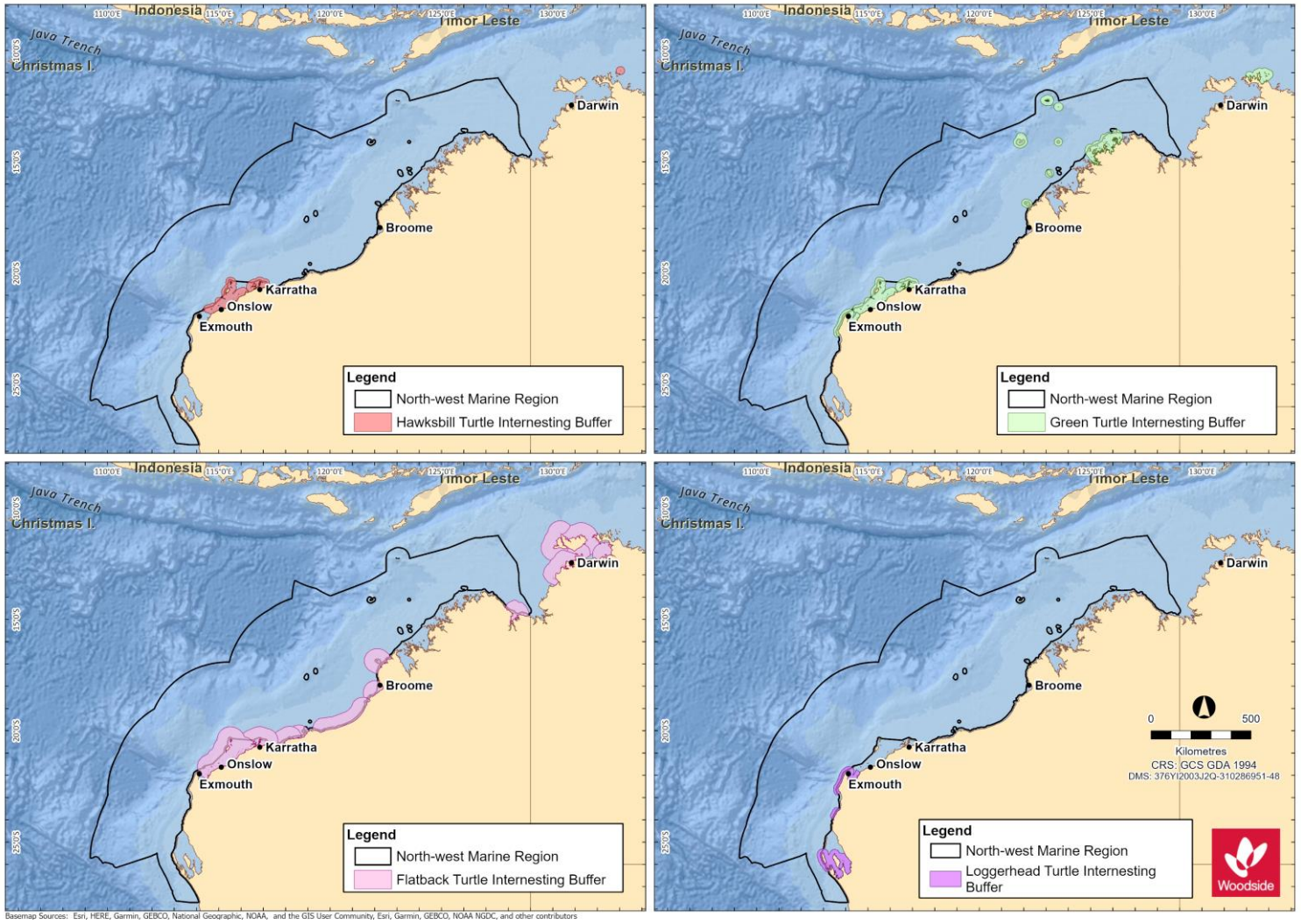

Figure 6-2 Marine turtle species habitat critical to survival (nesting beaches and internesting buffers) for the NWMR

6.3 Marine Turtle Biological Important Areas in the NWMR

A review of the National Conservation Values Atlas (DAWE, 2020[2]) identified BIAs for the four marine turtle species that occur within the NWMR. These are described in **Table 6-3**. Note that nesting and internesting BIAs are not listed in **Table 6-3** as they are defined as in the Recovery Plan as habitat critical to survival for marine turtles nesting beaches and internesting areas (refer **Table 6-2**).

[2] http://www.environment.gov.au/webgis-framework/apps/ncva/ncva.jsf

Table 6-3 Marine turtle BIAs within the NWMR

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration[3]
Green turtle	✓	✓	✓	No mating BIA identified within the NWMR.	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 Foraging in waters adjacent to James Price Point	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.
Hawksbill turtle	✓	✓	✓	No mating BIA identified within the NWMR.	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	Individuals may migrate up to 2400 km between their nesting and foraging grounds (DSEWPAC, 2012a).

[3] Migration BIA does not exist for Marine Turtles – general information provided.

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration[3]
					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	
Flatback turtle	✓	✓	-	Lacepede Islands Mating at Montebello Islands Mating at Dampier Archipelago (islands to the west of the Burrup Peninsula) Mating at Barrow Island A year-round internesting buffer biologically important area (BIA) of 80 km is located north and north-west of the Montebello Islands, extending 20 km further than the habitat critical to survival. However, use level for this BIA has been defined as very low (Commonwealth of Australia, 2017) and the habitat critical to survival internesting buffer is the legally recognised area of protection under the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* Refer to the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a) for locations of seasonal 80 km internesting buffer BIAs for flatback turtles	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	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).

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration[3]
Loggerhead turtle	✓	✓	-	No mating BIA identified within the NWMR	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	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, 2012).
Olive ridley turtle	✓	✓	-	No mating BIA identified within the NWMR	Foraging in the Western Joseph Bonaparte Depression and Gulf Foraging in the Dampier Archipelago (islands to the west of the Burrup Peninsula)	Migration routes and distances between nesting beaches and foraging areas are not known for Australian olive ridley turtles.

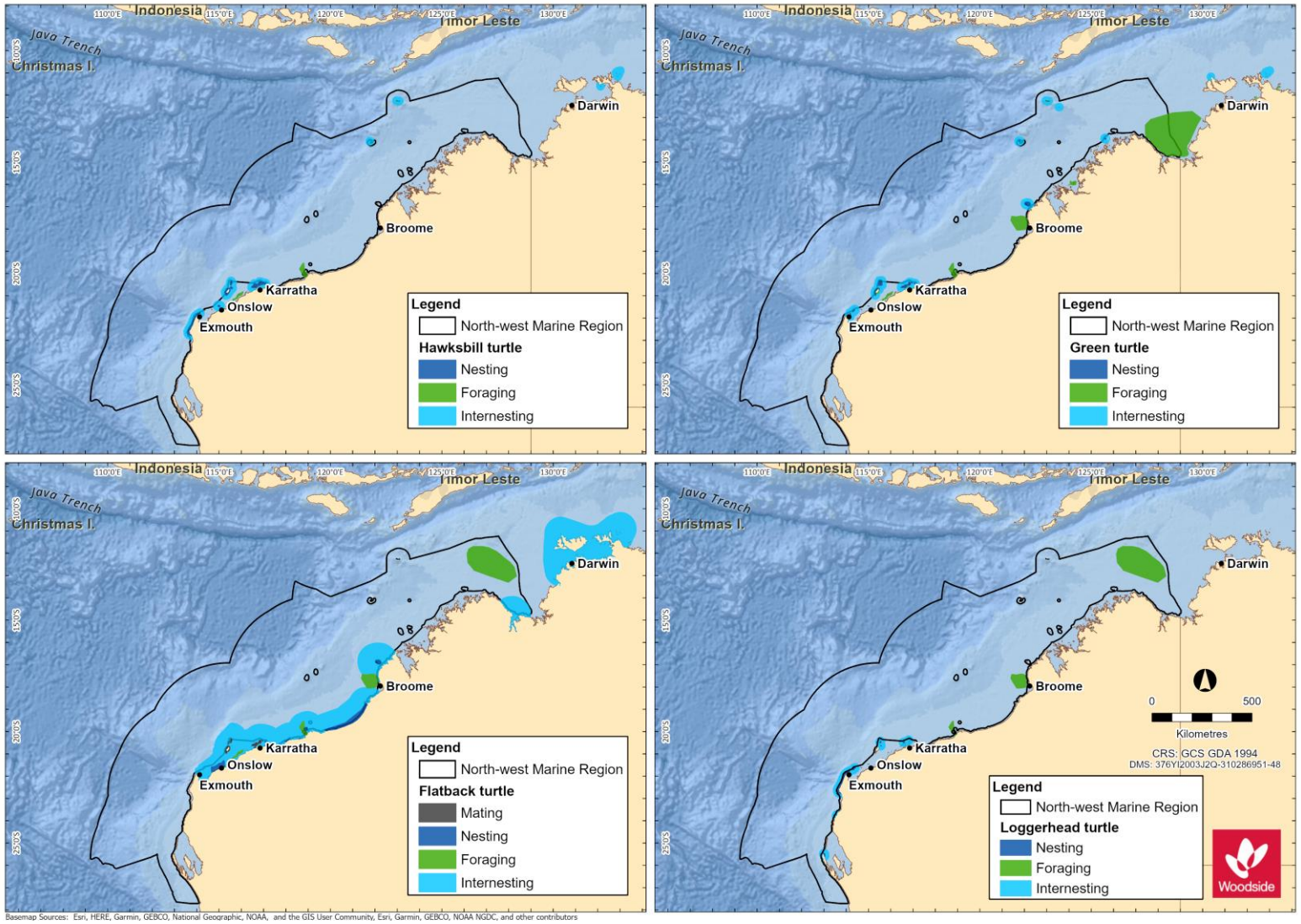

Figure 6-3 Marine turtle species BIAs within the NWMR

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 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**.

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 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. Combined with a smaller site at Lacrosse Island, the F-CD stock is one of the largest flatback turtle stocks in Australia. Average nesting abundance at Cape Domett is estimated at 3250 females per year (Whiting *et al.*, 2008). Designated habitat critical for the F-CD stock are the nesting locations of Cape Domett and Lacrosse Island, and an internesting buffer of 60 km radius around these rookeries, year-round with peak internesting activity occurring July to September. Extending further than the habitat critical internesting buffer, an internesting buffer BIA of 80 km is located at Cape Domett and Lacrosse Island.

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 stocks.

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 are outlined in **Table 6-3** and **Figure 6-3**.

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 G-NWS stock within the NWS / Scarborough activity area are located at Barrow 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, November to March.
Hawksbill Turtle	
Western Australia Stock (H-WA)	The H-WA stock is the largest in the Indian Ocean. The majority of the nesting for this stock is located in the Pilbara. The Dampier Archipelago has the largest nesting aggregation recorded. In particular, Rosemary Island supports the most significant hawksbill turtle rookery in the WA region and one of the largest in the Indian Ocean; approximately 500-1000 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, October to February.
Flatback Turtle	
South-west Kimberley Stock (F-swKim)	The genetic relationship between this nesting aggregation and the Cape Domett and Pilbara stocks is currently under review. Population numbers of the F-swKim stock are unknown. Major rookeries of the F-swKim stock are located at Eighty Mile Beach and Eco Beach. These areas are designated habitat critical for the stock and include an internesting buffer of 60 km radius around these rookeries, October to March.

Species / Genetic Stock	Key Information
Pilbara Stock (F-Pil)	The extent of genetic relatedness of flatback turtles along the WA coast is currently under review. Population numbers of the F-Pil stock are unknown. This stock nests on many islands in the Pilbara and southern Kimberley, with major rookeries at Mundabullangana Beach, Delambre Island 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, October to March. 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).

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**.

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, November to March.
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, November to May. Dirk Hartog Island in the Shark Bay Marine Park, with an average of 122 nests per day over 2.1 km (Reinhold and Whiting, 2014), is recognised as the most important loggerhead turtle rookery in WA (Commonwealth of Australia, 2016; as cited in Rob *et al.*, 2019).

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 **(Table 6-7**).

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 the reef flats or in shallow waters of the 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, Muiron Islands, 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.

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, 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 also support significant populations of dugong (DSEWPAC, 2012a, c).

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 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. However, there is little knowledge of the seasonal movements, migrations and breeding seasonality for many of the marine mammal species in the NMR due to lack of extensive surveys (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 as occurring within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Cetaceans - Mysticeti						
Balaenoptera musculus	Blue whale	Endangered	Migratory	Cetacean	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	Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2011-2021 (DSEWPAC, 2012d)
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Cetacean	Endangered	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Megaptera novaeangliae	Humpback whale	Vulnerable	Migratory	Cetacean	Conservation dependent	Conservation Advice *Megaptera novaeangliae* humpback whale (Threatened Species Scientific Committee, 2015b)
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Cetacean	Endangered	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee, 2015c)
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Cetacean	N/A	N/A
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	Cetacean	N/A	N/A
Cetaceans - Odontoceti						
Physeter macrocephalus	Sperm whale	N/A	Migratory	Cetacean	Vulnerable	N/A
Orcinus orca	Killer whale	N/A	Migratory	Cetacean	N/A	N/A
Orcaella heinsohni	Australian snubfin dolphin	N/A	Migratory	Cetacean	Priority	N/A
Sousa chinensis	Indo-Pacific humpback dolphin	N/A	Migratory	Cetacean	Priority	N/A

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	N/A	Migratory	Cetacean	N/A	N/A
Sirenians and Pinnipeds						
Dugong dugon	Dugong	N/A	Migratory	Marine	Other protected fauna	N/A
Neophoca cinerea	Australian sea lion	Endangered	N/A	Marine	Vulnerable	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 areas, characterised by high productivity, and migration routes associated with reproductive patterns. The NWMR is thought to be an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters for several cetacean species (DSEWPAC, 2012a).

From the Protected Matters search, 34 EPBC Act listed species were recorded as potentially occurring or having habitat within the NWMR (**Appendix A**). Of those, 12 cetacean species are listed as threatened and/or migratory, including baleen whales, toothed whales and dolphins that occur within the NWMR (**Table 7-2**).

7.3 Dugongs in the NWMR

The dugong is listed as migratory under the EPBC Act. Dugongs inhabit seagrass meadows in coastal waters, estuarine creeks and streams, and reef systems (DSEWPAC, 2012a).

Some of the coastal waters adjacent to the NWMR support significant populations of dugongs, including Shark Bay, Exmouth Gulf, in and adjacent to Ningaloo Reef, in coastal waters along the Kimberley coast, and on the edge of the continental shelf at Ashmore Reef (DEWHA, 2008).

Although the patterns of dugong movement in WA are not well understood, it is thought that dugongs move in response to availability of seagrass (Marsh *et al.*, 1994; Preen *et al.*, 1997) and water temperature.

There are a number of BIAs for dugong within and adjacent to waters of the NWMR (refer **Section 7.5**).

7.4 Pinnipeds in the NWMR

The Australian sea lion is listed as a species that may occur, or may have habitat within the NWMR (Protected Matters search - **Appendix A**). It is included here as the Australian sea lion is the only pinniped endemic to Australia (Strahan, 1983) and has been recorded within the southern extent of the NWMR at Shark Bay, WA (Kirkwood *et al.*, 1992). The most northern known breeding colony is at the Houtman Abrolhos Islands in the SWMR. The Australian sea lion's breeding range extends from the Houtman Abrolhos Islands, WA to The Pages Island, east of Kangaroo Island, SA. The Australian sea lion was listed as endangered in 2020 (Threatened Species Scientific Committee, 2020a). An assessment of the status and trends in abundance of this endemic, coastal pinniped species (Goldsworthy *et al.* 2021) documented an overall reduction in pup abundance over three generations, providing strong evidence that the species meets IUCN endangered criteria.

There are no BIAs for the Australian sea lion in the NWMR.

Table 7-2 Information on the threatened/migratory marine mammal species within the NWMR

Species	Key Information
Baleen whales (Mysticeti)	
Humpback whale	In Australian waters two genetically distinct populations migrate annually along the west (Group IV) and east coasts (Group V) between May and November. In WA, the migration pathway for the Group IV population (also known as Breeding Stock D) extends from Albany to the Kimberley coastline, passing through the NWMR (Threatened Species Scientific Committee, 2015b). Since the 1982 moratorium on commercial whaling population numbers have recovered significantly; from approximately 2000 to 3000 individuals in 1991, to between 19,200–33,850 individuals in 2008 (Bannister and Hedley, 2001; Bejder *et al.*, 2019; Hedley *et al.*, 2011). Aerial surveys off the WA coast undertaken between 2000 and 2008 produced a population estimate for the Group IV population of 26,100 individuals (CI 20,152–33,272) in 2008 (Salgado Kent *et al.*, 2012). Current population growth for the Group IV population is estimated to be between 9.7 and 13% per annum (Threatened Species Scientific Committee, 2015b). Using the Salago-Kent *et al.* (2012) estimate of 26,100 individuals and an annual population growth rate of ~10%, current population size could be in excess of 75,000 individuals (Woodside, 2019). 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, around the time of breeding and calving (typically August to 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). There are reports of neonates further south, suggesting that the calving areas may be poorly defined. Aerial photogrammetric surveys in 2013 and 2015 recorded large numbers of humpback whale calves along 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, 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). There are BIAs for migration and breeding and calving for the humpback whale along the WA coast and within the NWMR (refer **Table 7-3** and **Figure 7-1**).
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, nearly all blue whales sighted in the NWMR are likely to be pygmy blue whales. The East Indian Ocean (EIO) pygmy blue whale 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). 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: 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; and a 'northbound migratory stage' (April to August) where animals travel north back to Indonesia again. There are 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

Species	Key Information
	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 of the south-eastern Australia and may not reflect the full population but does imply an increasing population (McCauley *et al.*, 2018). 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). Refer **Table 7-3** and **Figure 7-2** 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 in other international locations that vary in morphology and migratory behaviours (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 (2011) 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, 2011). There are no identified BIAs for this species in the National Conservation Values Atlas.
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). Southern right whales aggregate in calving areas along the south coast of WA outside of the NWMR. However, there have been sightings in waters of the NWMR as far north as Ningaloo (Bannister and Hedley, 2001), and a stranding record exists for the far north Kimberley coast (ALA, 2020). Southern right whale calving grounds are found at mid to lower latitudes and are occupied during the austral winter and early-mid spring. They are regularly present on the southern Australian coast from about mid-May to mid-November, and peak periods for mating are from mid-July through August. Mating occurs within these breeding grounds as evidenced by many observations of intromission and mating behaviours. Southern right whales in south-western Australia appear to be increasing at the maximum biological rate but there is limited evidence of increase in south-eastern Australian waters (DSEWPAC, 2012d). There are no identified BIAs for this species in the NWMR.
Antarctic minke whale	The Antarctic minke whale is distributed worldwide and has been recorded off all Australian states (but not in the NT), feeding in cold waters and migrating to warmer waters to breed. It is thought that the Antarctic minke whale migrates up the WA coast to about 20°S to feed and possibly breed (Bannister *et al.*, 1996); however, detailed information about timing and location of migrations and breeding grounds within the NWMR is not well 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. There are no identified BIAs for this species in the National Conservation Values Atlas.
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

Species	Key Information
	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 National Conservation Values Atlas.
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 are from stranding events. Fin whales have been recorded vocalising off the Perth Canyon, WA, between January and April 2000 (McCauley *et al.*, 2000). It is currently not possible to accurately estimate the population size of fin whales in Australian waters predominantly due to the species' behaviour and local ecology, as the proportion of time they spend at the surface varies greatly depending on these factors. In addition, natural fluctuations of fin whales in Australian waters are unknown; however, long-range movements do appear to be prey-related. A recent study by Aulich *et al.* (2019) 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 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 way-station for feeding (Aulich *et al.*, 2019). Some whales were found to continue migrating as far north as Dampier (Aulich *et al.*, 2019). There are no identified BIAs for this species in the National Conservation Values Atlas.
Toothed whales (Odontoceti)	
Sperm whale	Sperm whales are the largest of the toothed whales and are distributed worldwide in deep waters (greater than 200 m) off continental shelves and sometimes near shelf edges (Bannister *et al.*, 1996). The species tends to inhabit offshore areas at depths of 600 m or more and is uncommon in waters less than 300 m deep (Ceccarelli *et al.*, 2011). There is limited information about sperm whale distribution in Australian waters, however, they are usually found in deep offshore waters, with more dense populations close to continental shelves and canyons. In the open ocean, there is a generalised movement of sperm whales southwards in summer, and corresponding movement northwards in winter, particularly for males. Detailed information about the distribution and migration patterns of sperm whales off the WA coast is not available. Females with young may reside within the NWMR all year round, males may migrate through the region and the species may be associated with canyon habitats (Ceccarelli *et al.*, 2011). Sperm whales have been recorded in deep waters off North-west Cape and appear to occasionally venture into shallower waters in other areas. Twenty-three (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 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). There are no identified BIAs for this species in the NWMR.
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	Key Information
	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, 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). 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 7-3** 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 EPBC Act. The Australian humpback dolphin (referred to as 'humpback dolphin' hereafter) inhabits the tropical/subtropical waters of the Sahul Shelf across northern Australia and southern Papua New Guinea (Jefferson and Rosenbaum, 2014). Based on historical stranding data, museum specimens and opportunistic sightings collected during aerial and boat-based surveys for other fauna it has been inferred that humpback dolphins occur from the WA/NT border south-west to Shark Bay (Hanf *et al.*, 2016). Allen *et al.* (2012) suggested that humpback dolphins use a range of inshore habitats, including both clear and turbid coastal waters across northern WA. The waters surrounding North-west Cape are an important area for the species. Boat-based surveys up to 5 km out from the coast (Brown *et al.*, 2012) recorded humpback dolphins from 0.3 to 4.5 km away from shore and in depths ranging from 1.2 to 20 m, with a mean of ~8 m. Other studies around North-west Cape, surveying waters up to 5 km from the coast, recorded humpback dolphins in water depths of up to 40 m (Hanf *et al.*, 2016). Based on density, site fidelity and residence patterns, North-west Cape is clearly an important habitat toward the south-western limit of this species' range (Hunt *et al.*, 2017). 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 **Table 7-3** and **Figure 7-4** 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

Species	Key Information
	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. Refer **Table 7-3** 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). Aerial surveys since the mid-1980s indicate that dugong populations are now stable at a regional scale in Shark Bay and in the Exmouth/Ningaloo Reef. Refer **Table 7-3** and **Figure 7-5** for the location and type of BIAs for dugong in the NWMR.
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 considered to be 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 7-6** shows the foraging BIAs for the Australian sea lion to the south of the NWMR.

7.5 Biological Important Areas in the NWMR

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	Breeding	Calving	Migration
Humpback whale[1]	✓	✓	✓	Shark Bay Exmouth Gulf (north migration – early June) (south migration – late Aug to Oct) Southern Kimberley region	No foraging BIA identified within the NWMR	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 [1] [2]	✓	✓	✓	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)
Australian snubfin dolphin [1]	✓	✓	-	No resting BIA identified within the NWMR	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	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	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	No migration BIA identified within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
					Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	Ord River	King George River Cape Londonderry Ord River	
Indo-Pacific humpback dolphin	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island Maret Islands Bigge Island King Sound, southern sector Vansittart Bay, Anjo Peninsula	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island	Roebuck Bay Willie Creek Prince Regent River	No migration BIA identified within the NWMR
Spotted bottlenose dolphin	✓	✓	✓	No resting BIA identified within the NWMR	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound	No calving BIA identified within the NWMR	No migration BIA identified within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
Dugong[1]	✓	✓	✓	No resting BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay Roebuck Bay Dampier Peninsula	No breeding BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay	Not listed as a migratory species

1. *DSEWPAC (2012a)*

2. *Commonwealth of Australia (2015a)*

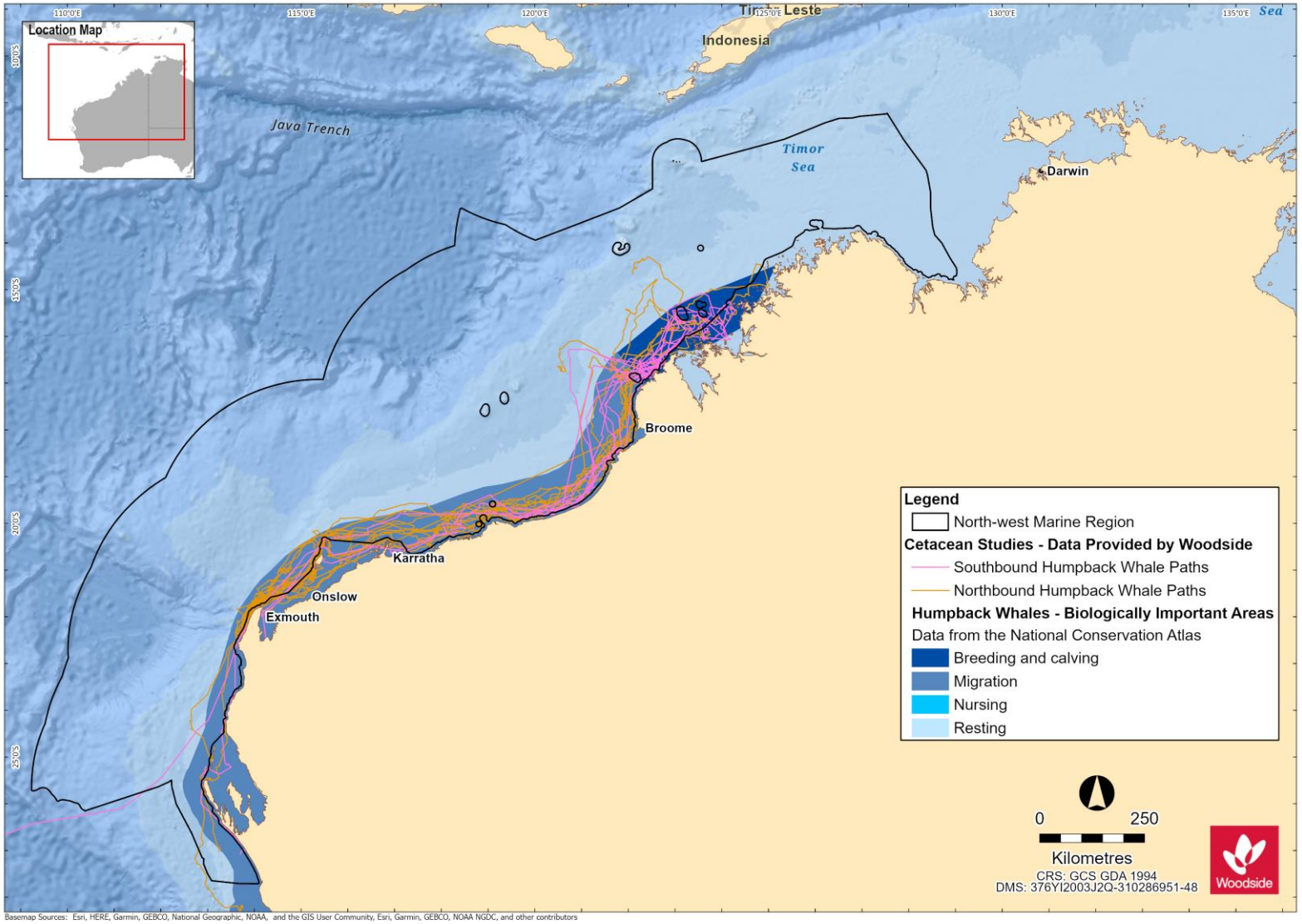

Figure 7-1 Humpback whale BIAs for the NWMR and tagged tracks for north and south bound migrations

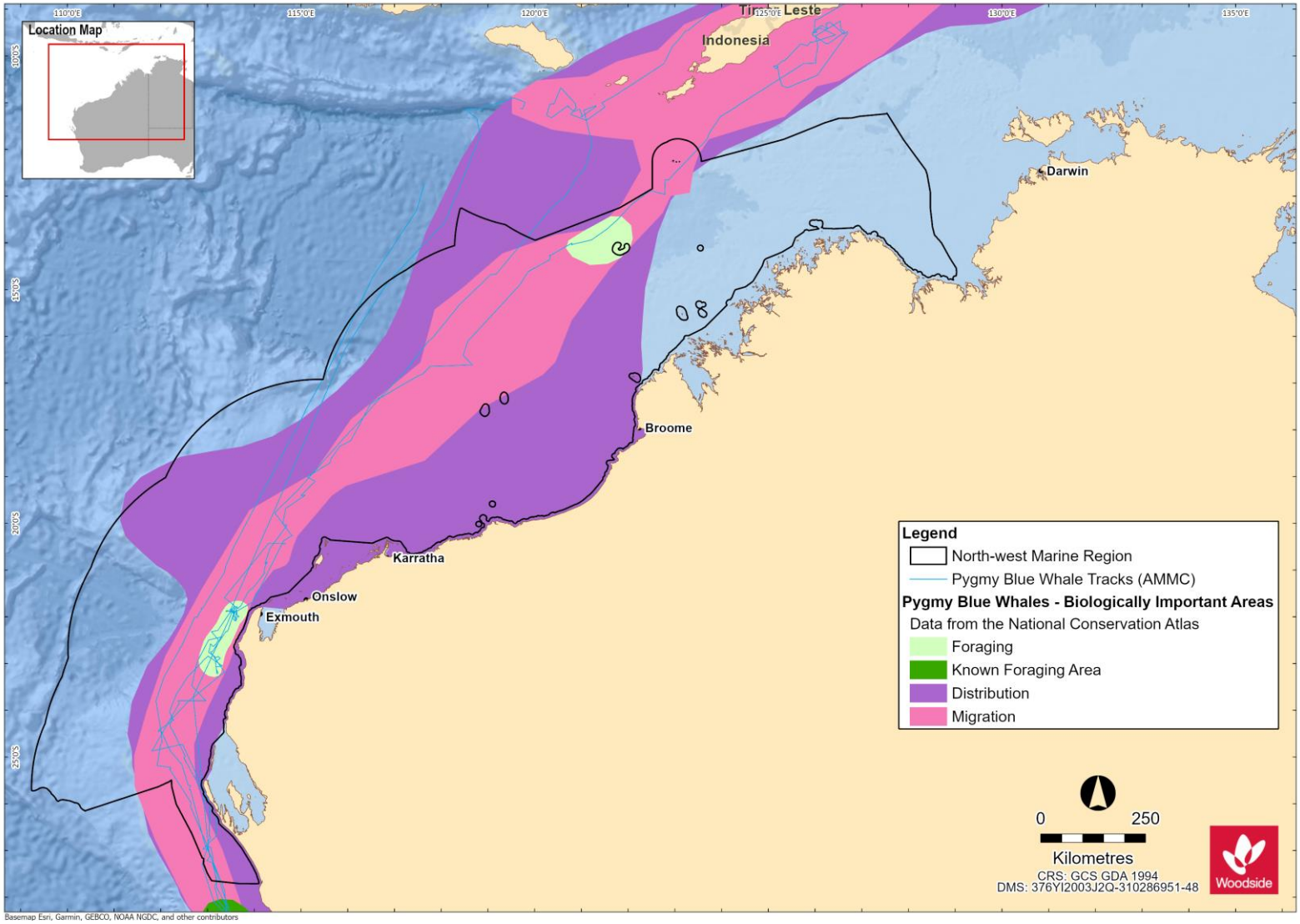

Figure 7-2 Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration

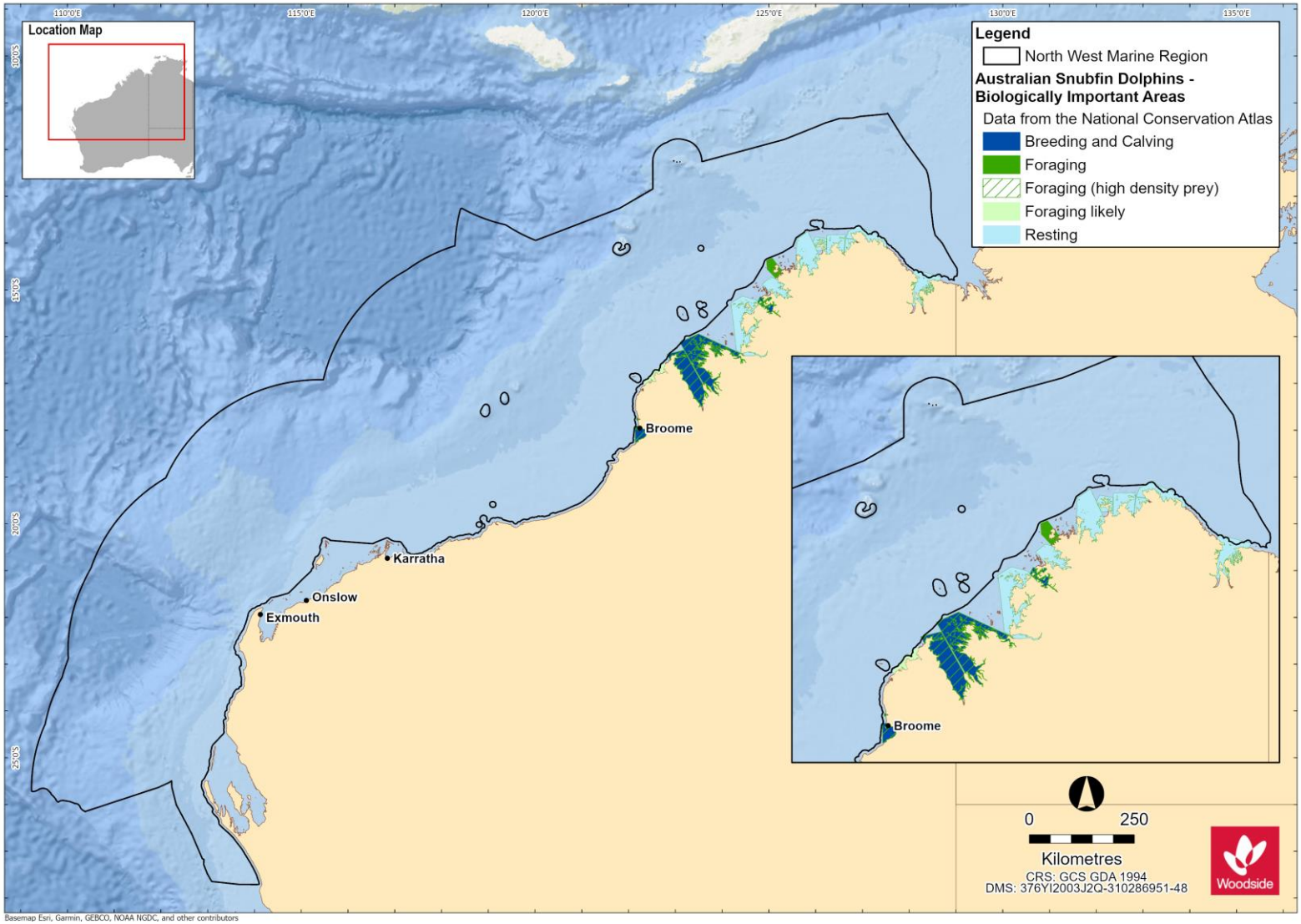

Figure 7-3 Australian snubfin dolphin BIAs for the NWMR

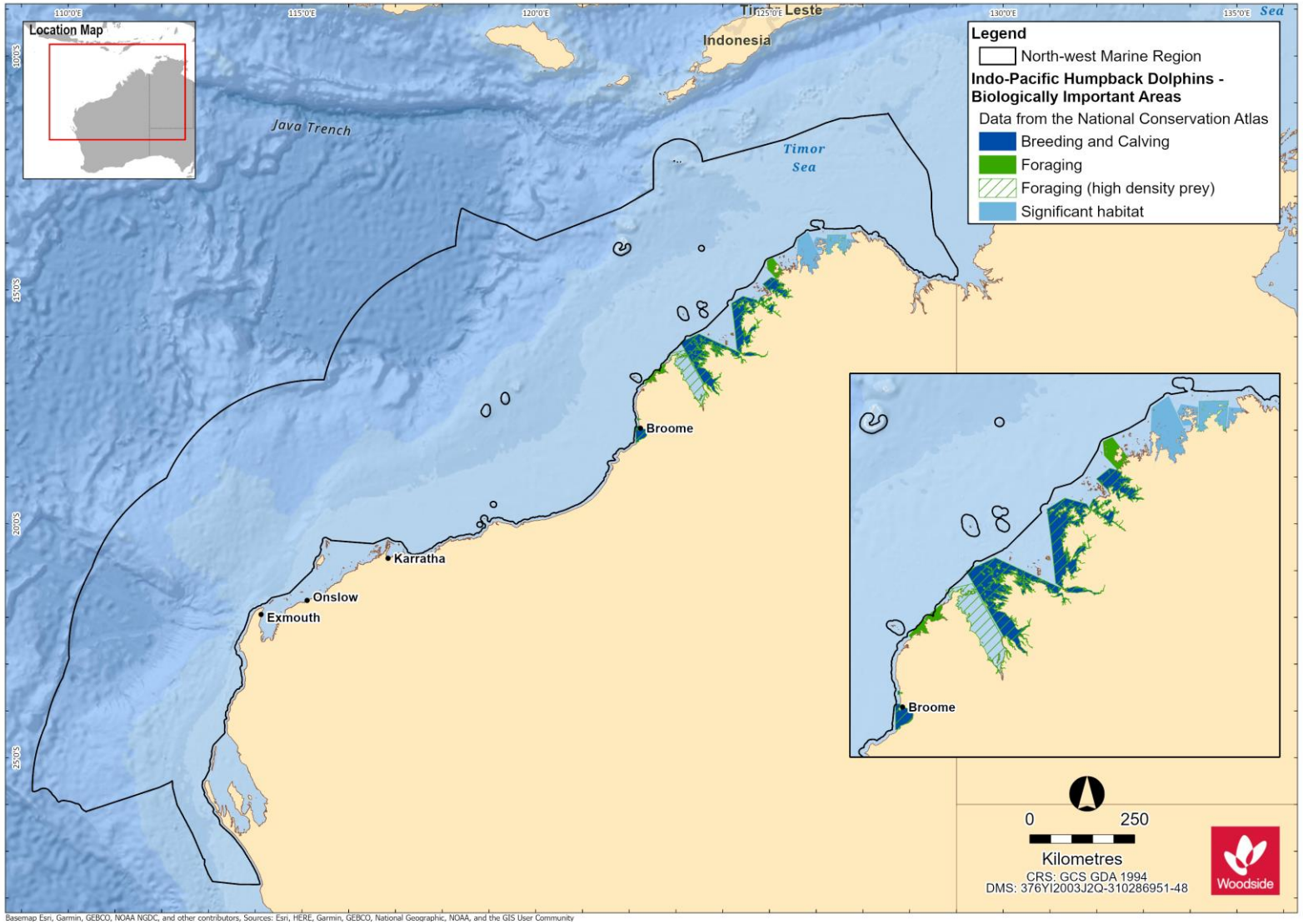

Figure 7-4 Indo-Pacific humpback dolphin BIAs for the NWMR

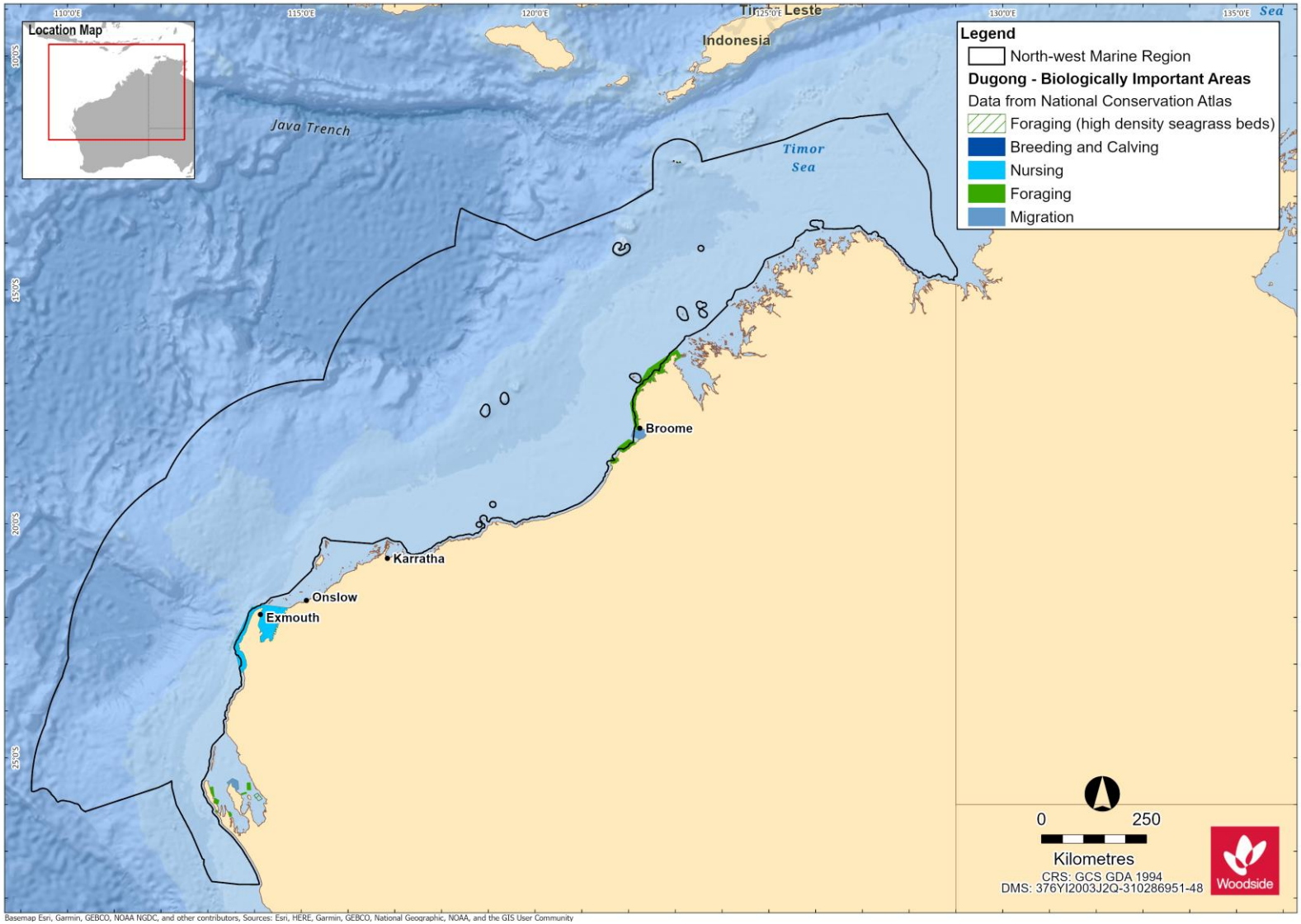

Figure 7-5 Dugong BIAs for the NWMR

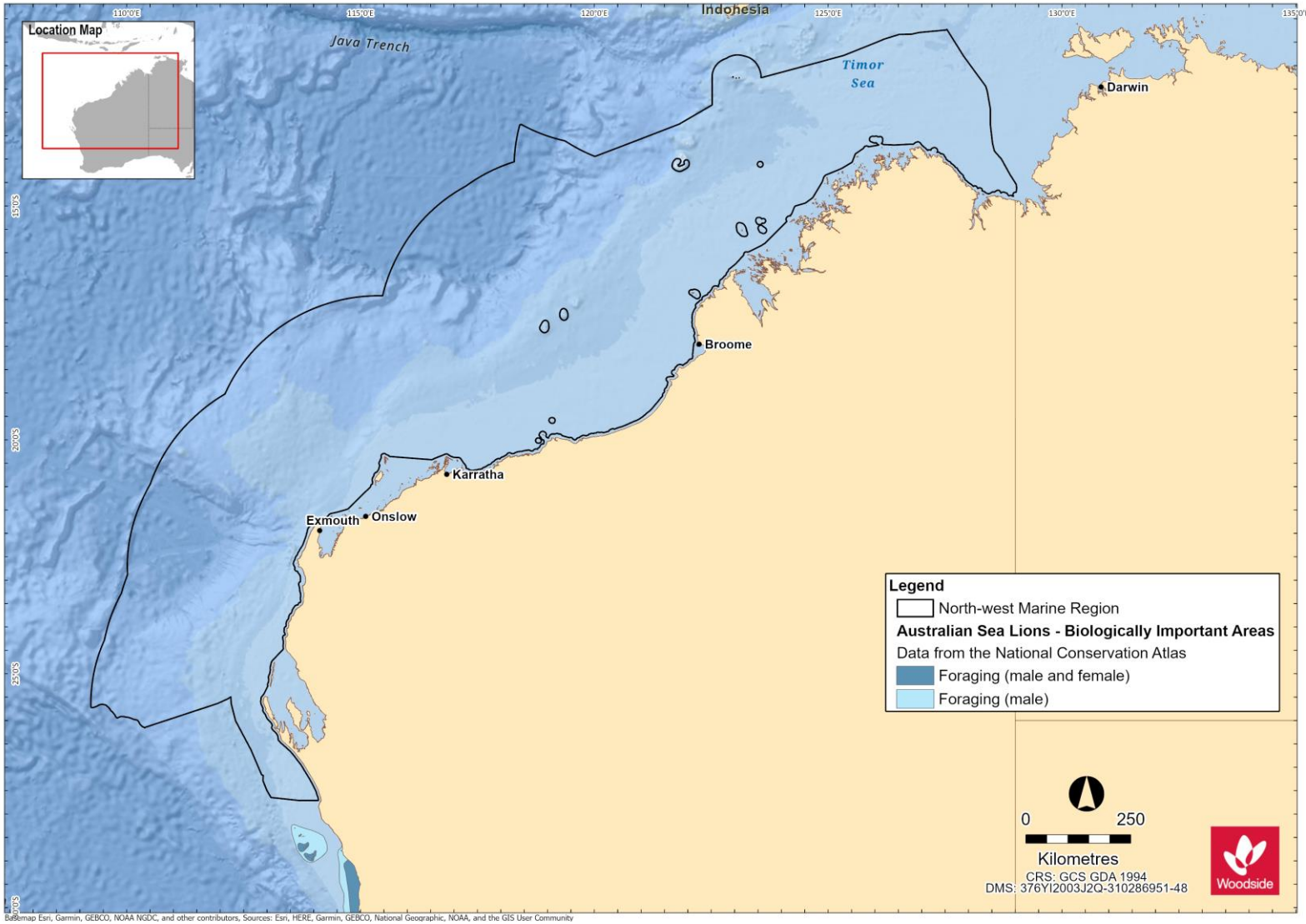

Figure 7-6 Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR

7.6 Marine Mammal Summary for the NWMR

7.6.1 Browse

The Browse activity area includes biologically important habitat for five 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); and
- dugong (foraging).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.6.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for five 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); and
- dugong (foraging and calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.6.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for three threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (resting and migration areas); and
- dugong (foraging and 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, 2012e). The NWMR marine bioregional plan also noted that Roebuck Bay and Eighty Mile Beach are internationally significant and recognised migratory shorebird locations.

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 the internationally significance under the Ramsar Convention. Important Bird Areas (IBAs) for the NWMR, which are also recognised as global Key Biodiversity Areas (KBAs) (BirdLife Australia[4]), 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 threatened and migratory seabird and shorebird species that occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

4 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. Bird species (threatened/migratory) identified by the EPBC Act PMST and other sources of information as potentially occurring within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Seabirds						
Macronectes giganteus	Southern giant petrel	Endangered	Migratory	Marine	Migratory	National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC, 2011c)
Papasula abbotti	Abbott's booby	Endangered	N/A	Marine	N/A	Conservation Advice for the Abbott's booby - *Papasula abbotti* (Threatened Species Scientific Committee, 2020b)
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Conservation Advice *Pterodroma mollis* soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Vulnerable	Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (DSEWPAC, 2011d)
Anous tenuirostris melanops	Australian lesser noddy	Vulnerable	N/A	Marine	Endangered	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee, 2015e)
Thalassarche carteri	Indian yellow-nosed albatross	Vulnerable	Migratory	Marine	Endangered	National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC, 2011c)
Anous stolidus	Common noddy	N/A	Migratory	Marine	Migratory	Draft Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2019)
Fregata ariel	Lesser frigatebird	N/A	Migratory	Marine	Migratory	
Fregata minor	Great frigatebird	N/A	Migratory	Marine	Migratory	
Sula leucogaster	Brown booby	N/A	Migratory	Marine	Migratory	
Sula sula	Red-footed booby	N/A	Migratory	Marine	Migratory	

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Onychiprion anaethetus (listed as *Sterna anaethetus)*	Bridled tern	N/A	Migratory	Marine	Migratory	
Thalasseus bergii	Greater crested tern	N/A	Migratory	Marine	Migratory	
Sternula albifrons	Little tern	N/A	Migratory	Marine	Migratory	
Sterna dougallii	Roseate tern	N/A	Migratory	Marine	Migratory	
Onychoprion fuscata	Sooty tern	N/A	N/A	Marine	N/A	
Hydroprogne caspia	Caspian tern	N/A	Migratory	Marine	Migratory	
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	Marine	Migratory	
Puffinus assimillis	Little shearwater	N/A	N/A	Marine	N/A	
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Marine	Vulnerable	
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Marine	Migratory	
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Marine	Migratory	
Chroicocephalus novaehollandiase	Silver gull	N/A	N/A	Marine	N/A	
Migratory shorebirds						
Numenius madagascariensis	Eastern curlew, Far Eastern curlew	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice *Numenius madagascariensis* eastern curlew (DOE, 2015a)
Calidris ferruginea	Curlew sandpiper	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice *Calidris ferruginea* curlew sandpiper (DOE, 2015b)
Calidris tenuirostris	Great knot	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice *Calidris tenuirostris* Great knot (Threatened Species Scientific Committee, 2016a)
Limosa lapponica menzbieri	Bar-tailed godwit (*menzbieri*)	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia). (Threatened Species Scientific Committee, 2016c)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Calidris canutus	Red knot	Endangered	Migratory	Marine	Endangered	Conservation Advice *Calidris canutus* Red knot (Threatened Species Scientific Committee, 2016b)
Charadrius mongolus	Lesser sand plover	Endangered	Migratory	Marine	Endangered	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threatened Species Scientific Committee, 2016e)
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	Marine	Vulnerable	Conservation Advice *Charadrius leschenaultia* Greater sand plover (Threatened Species Scientific Committee, 2016d)
All migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c).					

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, 2019). At least 34 seabird species listed as threatened, migratory and/or marine under the EPBC Act are known to occur regularly in the NWMR and include a variety of species of terns, noddies, petrels, shearwaters, frigatebirds, and boobies. Many of these species spend most of their lives at sea (predominately pelagic species), 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, 2012e).

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. Sixteen (16) species of seabirds breed there. Eighty percent 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**) and the information on a select number of seabird species documented for the NWMR (based on the screening criteria presented in **Section 3**), as presented in **Table 8-2**.

Table 8-2 Information on threatened/migratory seabird species of the NWMR

Species	Key Information
Seabirds	
Southern giant petrel	This species is included in the National recovery plan for threatened albatrosses and giant petrels. Habitat critical to survival is defined for breeding and foraging. There are six known breeding localities under Australian jurisdiction (for all species giant petrels) and all are located in the Southern Ocean including islands off Tasmania and within the Australian Antarctic Territory (DSEWPAC, 2011c). Habitat critical to survival identified for foraging is defined as waters south of 25 degrees latitude. The giant petrel species distribution is mainly within the Southern Ocean but this species does migrate into subtropical waters during the winter and its distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Abbott's booby	The Abbott's booby is a large, long-lived seabird known to nest only at Christmas Island. The recovery of this species is strongly dependent on the protection of breeding habitat defined habitat critical to the survival of this species on Christmas Island (Threatened Species Scientific Committee, 2020b). This species spends much of its time at sea and known to forage over large distances offshore when nesting and its range includes off the coast of Java, near the Chagos and in the Banda Sea, and may possibly extend into the north-western extent of the NWMR. No BIAs for this species are located in the NWMR.
Soft-plumaged petrel	This petrel species breeds only at two locations in Australian waters within the Southern Ocean (one off Tasmania and Macquarie Island) (Threatened Species Scientific Committee, 2015f). As a mainly sub-Antarctic species they are usually distributed in cooler seas but distribution extents into subtropical waters and its known distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Australian fairy tern	The Australian fairy tern is listed as Vulnerable for the sub-species only recorded for WA. It has a coastal distribution from Sydney, south to Tasmania and around southern WA up to the Dampier Archipelago and out on the offshore island groups of Barrow, Montebello and the Lowendals (DSEWPAC, 2011d). The Australian fairy tern feeds on small baitfish and roosts and nests on sandy beaches below vegetation. These behaviours, generally, occur in inshore waters of island archipelagos and on the Australian mainland shores and adjacent wetlands. Fairy terns breed from August to February. The Australian fairy tern is unlikely to be present

Species	Key Information
	within the offshore environment of the NWMR. The largest breeding colony in Western Australia for this species is in the Houtman Abrolhos Islands, SWMR (Surman, 2019). For the description and location of BIAs in the NWMR, refer to **Table 8-3** and **Figure 8-2**.
Australian lesser noddy	The Houtman Abrolhos, WA is an important breeding habitat for the Australian lesser noddy in the eastern Indian Ocean. This species exhibits nesting habitat specialisation (white mangrove stands) and has a limited foraging range during the breeding season. Furthermore, the lesser noddy forages over shelf waters and appears not to disperse over their non-breeding period as they remain largely in the general vicinity or slightly to the south of the colony in the non-breeding season (February to September; Surman *et al*., 2018). No BIAs for this species are located in the NWMR.
Indian yellow-nosed albatross	This species is included in the National recovery plan for threatened albatrosses and giant petrels. Habitat critical to survival is defined for breeding and foraging. There are six known breeding localities under Australian jurisdiction (for all species of albatrosses) and all are located in the Southern Ocean including islands off Tasmania and within the Australian Antarctic Territory (DSEWPAC, 2011c). Habitat critical to survival identified for foraging is defined as waters south of 25 degrees latitude. All albatross species distribution (including the Indian yellow-nose albatross) is mainly within the Southern Ocean but this species does migrate into subtropical waters during the winter and its distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Common noddy	This species is listed as migratory and marine. The common (or brown) noddy is the largest species of noddy found in Australian waters. The species is widespread in tropical and subtropical areas beyond Australia. This seabird species is gregarious and normally occurs in flocks, up to hundreds of individuals, when feeding or roosting. The Houtman Abrolhos, WA is the primary breeding habitat for the common noddy in the Eastern Indian Ocean. This species spends their non-breeding season (March to August) in the NWS area, around 950 km north from the breeding colony (Surman *et al*. 2018). The species occurs within NWMR waters, particularly around offshore islands such as the Montebello Island group. This species is recorded on unmanned oil and gas platforms within the NWS. No BIAs for this species are located in the NWMR.
Lesser frigatebird **Great frigatebird**	Both species of frigatebird are listed as migratory and marine. Within the NWMR, the lesser frigatebird is known to breed on Adele, Bedout and West Lacepede islands, Ashmore Reef and Cartier Island (Commonwealth of Australia, 2019). The lesser frigatebird feeds mostly on fish and sometimes cephalopods, and all food is taken while the bird is in flight. Lesser frigatebirds generally forage close to breeding colonies. Breeding/foraging BIAs for the lesser frigatebird are located in the NWMR; refer to **Table 8-3**.
Brown booby	The brown booby is the most common booby, occurring throughout all tropical oceans bounded by latitudes 30º N and 30º S. There are large colonies on offshore islands within the NWMR such as the Lacepede Islands (one of the largest colonies in the world), Ashmore Reef, and other offshore Kimberley islands. This seabird species is a specialised plunge diver, mostly eating fish and some cephalopods (Commonwealth of Australia, 2019). Breeding/foraging BIAs for the brown booby are located in the NWMR; refer to **Table 8-3** and **Figure 8-3**.
Red-footed booby	Within the NWMR, its known breeding sites for this species include Ashmore Reef and Cartier Island. It is a pelagic species and generally occurs away from land. It mainly eats flying fish and squid. Prey abundance is reliant on the high productivity in slope areas off remote islands where the birds breed (Commonwealth of Australia, 2019). Breeding/foraging BIAs for the red-footed booby are located in the NWMR; refer to **Table 8-3** and **Figure 8-3**.
Greater crested tern	The greater crested tern has a widespread distribution recorded on islands and coastlines of tropical and subtropical areas, ranging from the Atlantic coast of South Africa, Indian Ocean and through south-east Asia and Australia. Outside the breeding season it can be found at sea throughout its range, with the exception of the central Indian Ocean (Commonwealth of Australia, 2019). The largest breeding colony in WA for this species is the Houtman Abrolhos Islands, SWMR (Surman, 2019). No BIAs for this species are located in the NWMR.
Little tern	There are three sub-populations of this species in Australia and two of these occur in the NWMR: northern Australian breeding sub-population occurring around Broome and extending across in to the NMR, and an east Asian breeding sub-population, with the terns present from Shark Bay to south-eastern Queensland during the austral summer. Little terns

Species	Key Information
	usually forage close to breeding colonies in the shallow water of estuaries (Commonwealth of Australia, 2019). For the description and location of BIAs in the NWMR, refer to **Table 8-3** and **Figure 8-2**.
Roseate tern	This species is generally tropical in distribution and there are many breeding populations in the NWMR, including Ashmore Reef, Napier Broome Bay, Bonaparte Archipelago, Lacepede Islands, Dampier Archipelago and the Lowendal Islands. A large number of non-breeding roseate terns have been observed at several remote locations in the Kimberley and there are high numbers also recorded for Eighty Mile Beach Ramsar site. The Kimberley colonies are likely to be another sub-species that breeds in east Asia. Roseate terns predominately eat small pelagic fish (Commonwealth of Australia, 2019). The largest breeding colony in Western Australia for this species is in the Houtman Abrolhos Islands, SWMR (Surman, 2019). For the description and location of BIAs in the NWMR, refer to **Table 8-3** and **Figure 8-2**.
Wedge-tailed shearwater	The wedge-tailed shearwater is a pelagic, marine seabird known from tropical and subtropical waters. Its distribution is widespread across the Indian and Pacific oceans. It is known to breed on the east and west coasts (and offshore islands) of Australia. This species is known to consume fish, cephalopods, and other biota primarily via contact-dipping. Wedge-tailed shearwaters are now understood to undertake extensive foraging trips (over thousands of kilometres over periods of days when chicking and provisioning young) and much longer and extensive pelagic travels over the north-west Indian Ocean during the non-breeding season, targeting current boundaries and upwellings. The species breeds throughout its range, mainly on vegetated islands, atolls and cays and excavates burrows in the ground where chicks are raised (Commonwealth of Australia, 2019). Large breeding colonies of the wedge-tailed shearwater are located on the Houtman Abrolhos islands (SWMR) (Surman *et al*., 2018) and several locations in the NWMR including: Muiron Islands (North-west Cape), Varanus Island and the Dampier Archipelago in the Pilbara where burrow numbers were estimated to several hundred thousand to half a million such as on the Muiron Islands, though it is not known if all burrows are utilised on an annual basis (Birdlife Australia, 2018; Surman *et al.*, 2018). Cannell *et al* (2019) satellite tracked adult wedge-tailed shearwaters during egg incubation and chick rearing on the Muiron Islands in January 2018. For the incubation trips, there was a strong consistency for the birds to travel towards seamounts, typically located north-west of the Muiron Islands, between Australia and Indonesia. One bird however remained south-west of the islands, in the Cape Range Canyon. A similar pattern to utilise areas associated with sea mounts was also observed for the long foraging trips during chick rearing, though some of the foraging was concentrated in deeper waters. A bimodal foraging strategy during chick-rearing was observed, with adults undertaking long foraging trips after a series of shorter foraging trips within the NWMR. Surman *et al*. (2018) reported most wedge-tailed shearwaters from the breeding colonies on the Houtman Abrolhos undertook extensive non-breeding migrations. This seabird species occupied waters adjacent or to the north of their nesting sites or migrated 4200 km north-west into the equatorial central Indian Ocean near the Ninety East Ridge during the non-breeding season (later April to mid-November). For the description and location of BIAs in the NWMR, refer to **Table 8-3** and **Figure 8-1**.
Flesh-footed shearwater	The species mainly occurs in the subtropics, over continental shelves and slopes and occasionally inshore waters, with individual birds pass through the tropics and over deeper waters during migration to the North Pacific and Indian oceans (Commonwealth of Australia, 2019). They are a common visitor to the waters off southern Australia, from south-western WA to south-eastern Queensland. The fleshy-footed shearwater is a trans-equatorial migrant, breeding from late September to May off south-western Australia, and migrating north by early May, across the southern Indian and possibly Indonesia to the northern Pacific Ocean. No BIAs for the flesh-footed shearwater are located in the NWMR.
Streaked shearwater	The streaked shearwater has a broad distribution in the western Pacific Ocean, breeding on the coast and offshore islands of Japan, Russia, China and the Korean Peninsula. During winter months (non-breeding season), the species undertakes trans-equatorial migration to the coasts of Vietnam, New Guinea, the Philippines, Australia, southern India and Sri Lanka. The streaked shearwater feeds mainly on fish and squid that it catches by surface-seizing and shallow plunges (Commonwealth of Australia, 2019). No BIAs for the streaked shearwater are located in the NWMR.
White-tailed tropicbird	Tropicbirds are predominately pelagic species and the white-tailed tropicbird forages in warm waters and over long distances (pan-tropical). The species is most common off north-west Australia. In the NWMR, this species is considered a sub-species and are limited in number and distribution. Nesting sites are known for Clerke Reef (Rowley Shoals) and Ashmore

Species	Key Information
	Reef. Christmas Island is also a known nesting site and the species can disperse several thousand kilometres during foraging trips. This species feeds mainly on fish and cephalopods, captured by deep plunge diving (Commonwealth of Australia, 2019). There are breeding BIAs at the Rowley Shoals and Ashmore Reef within the NWMR for the white-tailed tropicbird; refer to **Table 8-3**.
Silver gull	The silver gull is typically described as an inshore and coastal foraging seabird and has an Australian-wide distribution including locations within the NWMR. It is noted as it has been recorded on unmanned oil and gas platforms located within the NWS.

8.2.1 Biologically Important Areas in the NWMR

BIAs representing important life cycle stages and behaviours for eight species of seabird in the NWMR are presented in **Table 8-3**.

Table 8-3 Seabird BIAs within the NWMR

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 barrier 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	

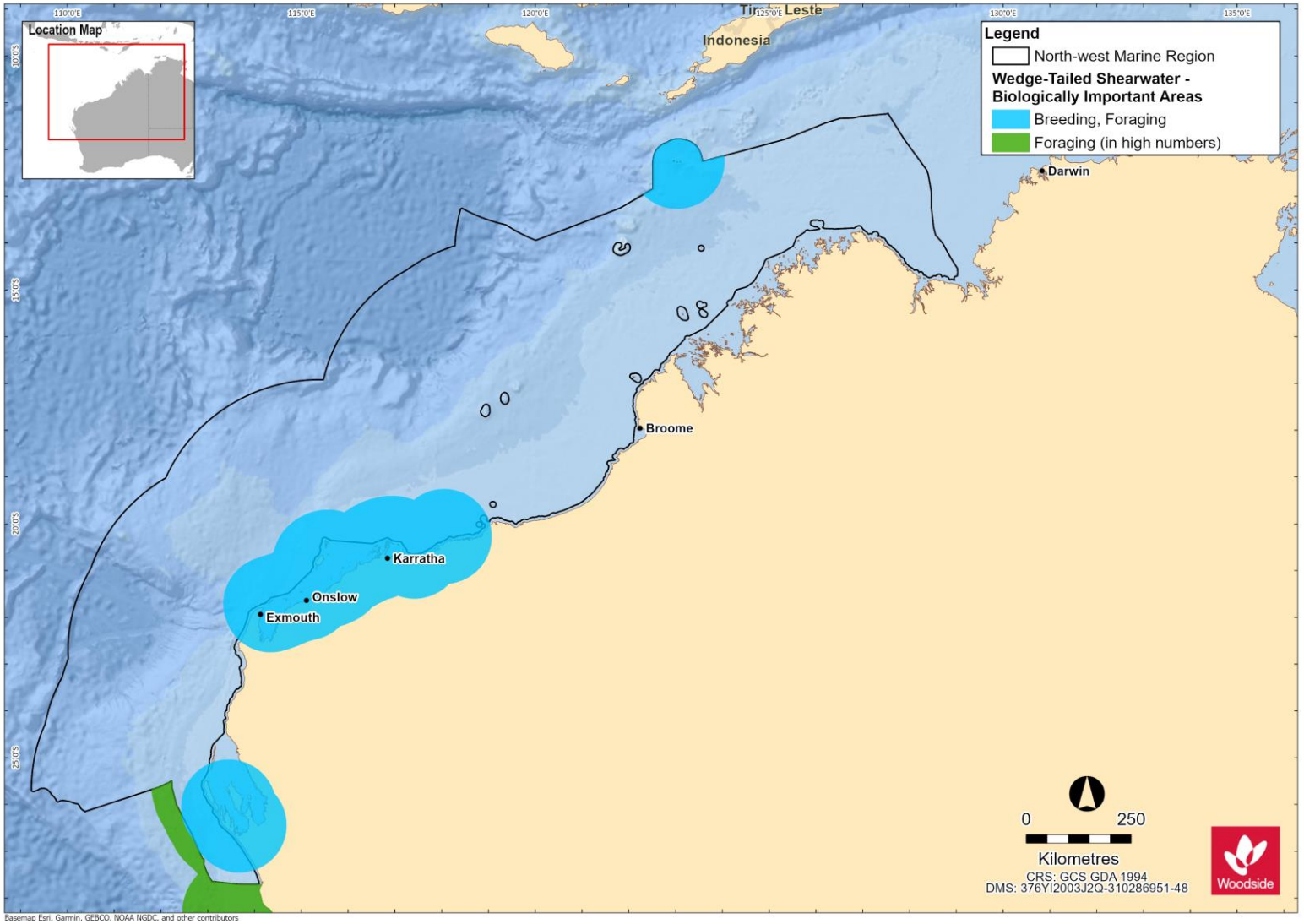

Figure 8-1 Wedge-tailed shearwater BIAs for the NWMR

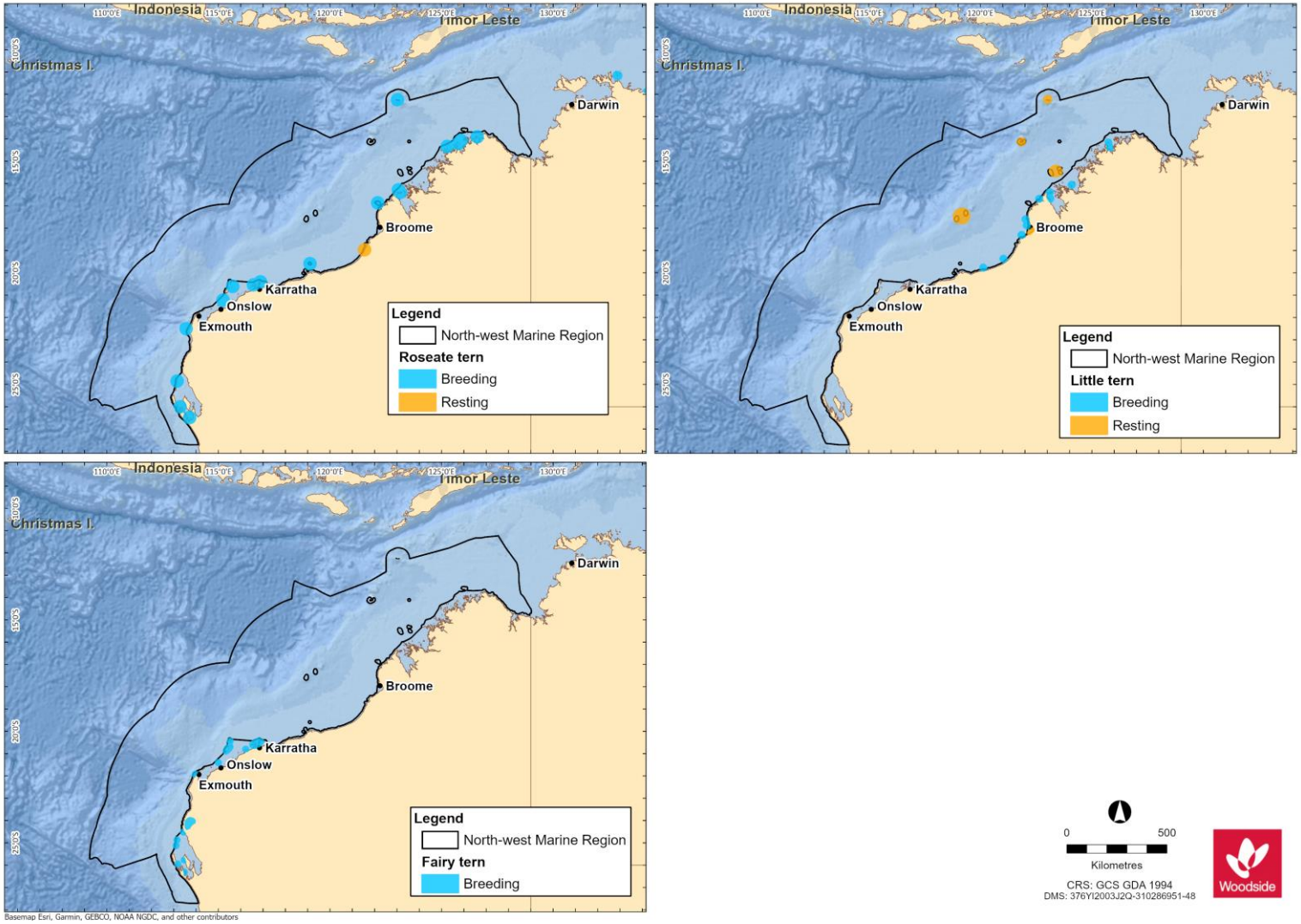

Figure 8-2 Tern species BIAs for the NWMR

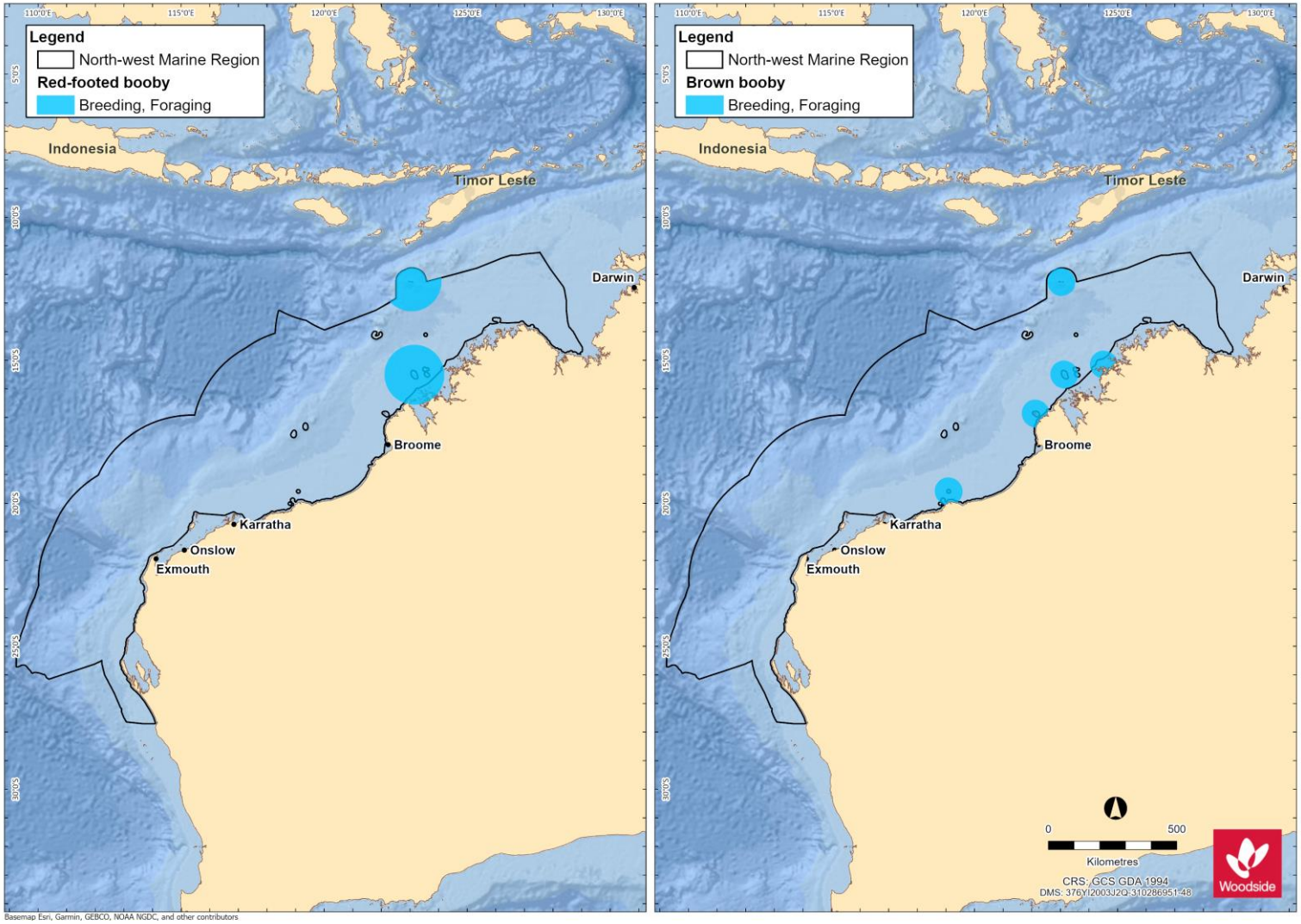

Figure 8-3 Red-footed and brown booby BIAs for the NWMR

8.2.2 Seabird Summary for NWMR

8.2.2.1 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**.

8.2.2.2 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for five threatened and/or migratory seabird species:

- wedge-tailed shearwater (breeding/foraging);
- lesser frigatebird (breeding/foraging);
- brown booby (breeding/foraging);
- little tern (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.2.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for five 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 outlined in **Table 8-3**.

8.3 Shorebirds

Shorebirds (migratory and resident species) are generally associated with wetland or coastal environments, and the NWMR hosts a large number of many shorebird species, particularly in the Austral summer (refer to **Appendix A** for the EPBC Act PMST reports on listed species of shorebirds). Shorebirds may use coastal environments for feeding, nesting or migratory stopovers. In coastal environments, shorebirds generally feed during low tide on exposed intertidal mud and sand flats, and roost in suitable habitat above the high water mark. Many shorebird species undergo annual migrations, typically breeding at high latitudes of the Northern Hemisphere and migrating south for the non-breeding season and Australia is part of the East Asian-Australasian Flyway (EAAF). 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). The EAAF is of most relevance to the NWMR. There are 37 species of shorebird which annually migrate to Australia via the EAAF and 36 of these species spend the austral summer (non-breeding season) foraging and roosting in coastal and wetland habitats (Commonwealth of Australia, 2015c; Weller and Lee, 2017).

Ashmore Reef is documented as a BIA for migratory shorebirds in the NWMR (DSEWPAC, 2012a).

Table 8-4. Information on threatened/migratory shorebird species of the NWMR

Species	Key Information
Shorebirds	
Eastern curlew, Far eastern curlew	This species is the largest, migratory shorebird in the world, with a long neck, long legs and a very long downcurved bill and is a long-haul flyer. The eastern curlew is a coastal species with a continuous distribution north from Barrow Island to the Kimberley region. The species is endemic to the EAAF and is a non-breeding visitor to Australia from August to March, primarily foraging on crabs and molluscs in intertidal mudflats. During the non-breeding season in Australia, this species is most associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (DOE, 2015a).
Curlew sandpiper	The curlew sandpiper breeds in northern Siberia but has a non-breeding range that extends from western Africa to Australia, with small numbers reaching New Zealand (Bamford *et al*., 2008). In Australia, curlew sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states and the NT during the non-breeding period, and also during the breeding season when many non-breeding one-year old birds remain in Australia rather than migrating north along the EAAF. The species preferred habitat for foraging is mudflats and nearby shallow waters in sheltered coastal areas such as estuaries, bay, inlets and lagoons (DOE, 2015b).
Great knot	The great knot breeds in the Northern Hemisphere and undertakes biannual migrations along the EAAF to non-breeding habitat in Australia. The great knot winters in Australia and has been recorded around the entirety of the Australian coast the greatest numbers are found in northern Western Australia (Pilbara (Dampier Archipelago) and Kimberley and the Northern Territory. In Australia, this species prefers sheltered, coastal habitat with large intertidal mudflats or sandflats (inkling inlets, bays, harbours, estuaries and lagoons). High numbers (exceeding several thousand birds are regularly recorded from Roebuck Bay. The great knot feeds on a variety of invertebrates by pecking at or just below the surface of moist mud or sand (Threatened Species Scientific Committee, 2016a).
Bar-tailed godwit (*menzbieri*)	The bar-tailed godwit is a large, migratory shorebird and there are two sub-species in the EAAF (*Limosa lapponica baueri* and *L. l. menzbieri*). The sub-species *L. l. menzbieri* breeds in northern Siberia and spends its non-breeding period mostly in the north of WA but also in South-east Asia. The bar-tailed godwit (*menzbieri*) usually forages near the water in shallow water, mainly in tidal estuaries and harbours with a preference for exposed sandy or soft mud substrates on intertidal flats, banks and beaches (Threatened Species Scientific Committee, 2016c).
Red knot (*piersmai*)	This species is a small to medium migratory shorebird. There are two sub-species that cannot be distinguished from each other in nonbreeding plumage, however, *Calidris canutus piersmai* tend to overwinter almost exclusively in north-west Australia. The red knot migrates long distances from breeding grounds in high northern latitudes, where it breeds during the boreal summer, to the Southern Hemisphere during the austral summer with migration along the EAAF. Very large numbers are recorded for the north-west Australia and is common in all suitable habitats around the coast, including inland clay pans near Roebuck Bay (where the species roosts). The red knot usually forages in soft substrate along the waters edge on intertidal mudflats, sandflats and sandy beaches of sheltered coasts (Threatened Species Scientific Committee, 2016b).
Lesser sand plover	The lesser sand plover is a small to medium shorebird and one of 36 migratory shorebirds that breed in the Northern Hemisphere during the boreal summer and are known to annually migrate to the non-breeding grounds of Australia along the EAAF for the austral summer. There are five different sub-species and it is most likely the non-breeding ranges of the sub-species *Charadrius m. mongolus* overlaps with the NWMR. This species is widespread in coastal regions, preferring sandy beaches, mudflats of coastal bays and estuaries (Threatened Species Scientific Committee, 2016e).
Greater sand plover	The greater sand plover is a small to medium shorebird and in its non-breeding plumage is difficult to distinguish from the lesser sand plover. This species breeds in the Northern

Species	Key Information
	Hemisphere and undertakes annual migrations to and from Southern Hemisphere feeding grounds in the austral summer along the EAAF. The species distribution in Australia during the non-breeding season is widespread, in WA the greater sand plover is widespread between Northwest Cape and Roebuck Bay (Threatened Species Scientific Committee, 2016d).

9. 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**) and outlined in **Table 9-1, Table 9-2** and **Table 9-3,** and **Figure 9-1, Figure 9-2** and **Figure 9-3**.

Table 9-1 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 9-3**)	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 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	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 and is adjacent to the three nautical mile State waters limit surrounding Clerke and Imperieuse reefs, and include the Mermaid Reef Marine Park as described in **Section 10**. 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 is an area of moderately enhanced productivity, 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. 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 Likely to be important due to their historical association with sperm whale aggregations	
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 plateau are interconnected and support the high productivity and species richness of Ningaloo Reef, globally significant as 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 NCVA, is defined as the waters contained in the existing Ningaloo AMP provided in **Section 10**.
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.

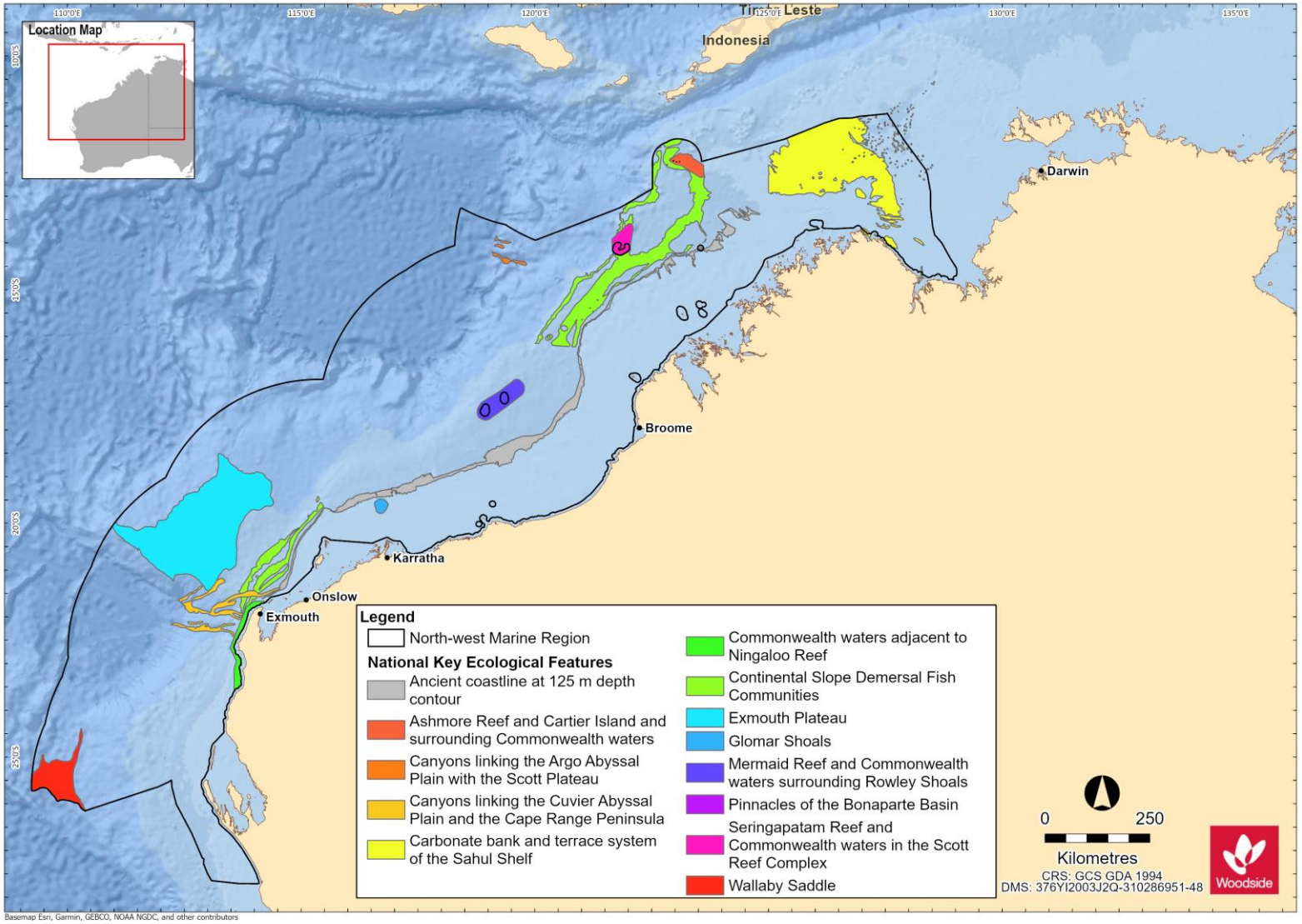

Figure 9-1 Key Ecological Features (KEFs) within the NWMR.

Table 9-2 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.

KEF Name	Values[1]	Description
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.
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.

KEF Name	Values[1]	Description
Western demersal slope and associated fish communities of the Central Western Province	Provides important habitat for demersal fish communities and supports species groups that are nationally or regionally important to biodiversity	The western demersal slope provides important habitat for demersal fish communities, with a high level of diversity and endemism. A diverse assemblage of demersal fish species below a depth of 400 m is dominated by relatively small benthic species such as grenadiers, dogfish and cucumber fish. Unlike other slope fish communities in Australia, many of these species display unique physical adaptations to feed on the sea floor (such as a mouth position adapted to bottom feeding), and many do not appear to migrate vertically in their daily feeding habits.
Western rock lobster	A species that plays a regionally important ecological role	This species is the dominant large benthic invertebrate in the region. The lobster plays an important trophic role in many of the inshore ecosystems of the SWMR. Western rock lobsters are an important part of the food web on the inner shelf, particularly as juveniles.

1. Values description sourced from Marine bioregional plan for the South-west Marine Region (DSEWPAC, 2012b) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database

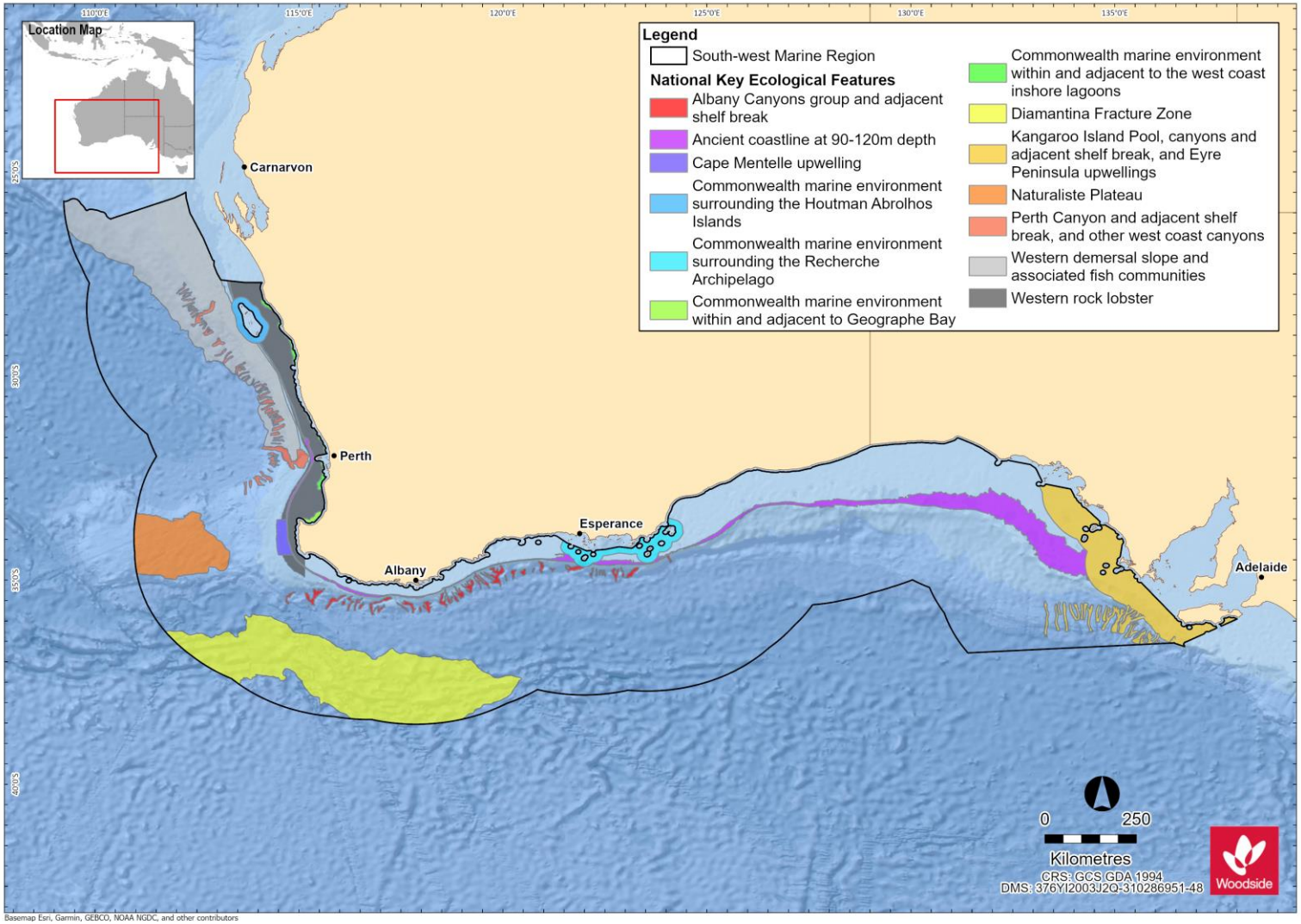

Figure 9-2. Key Ecological Features (KEFs) within the SWMR

Table 9-3 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 9-1**)	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.*

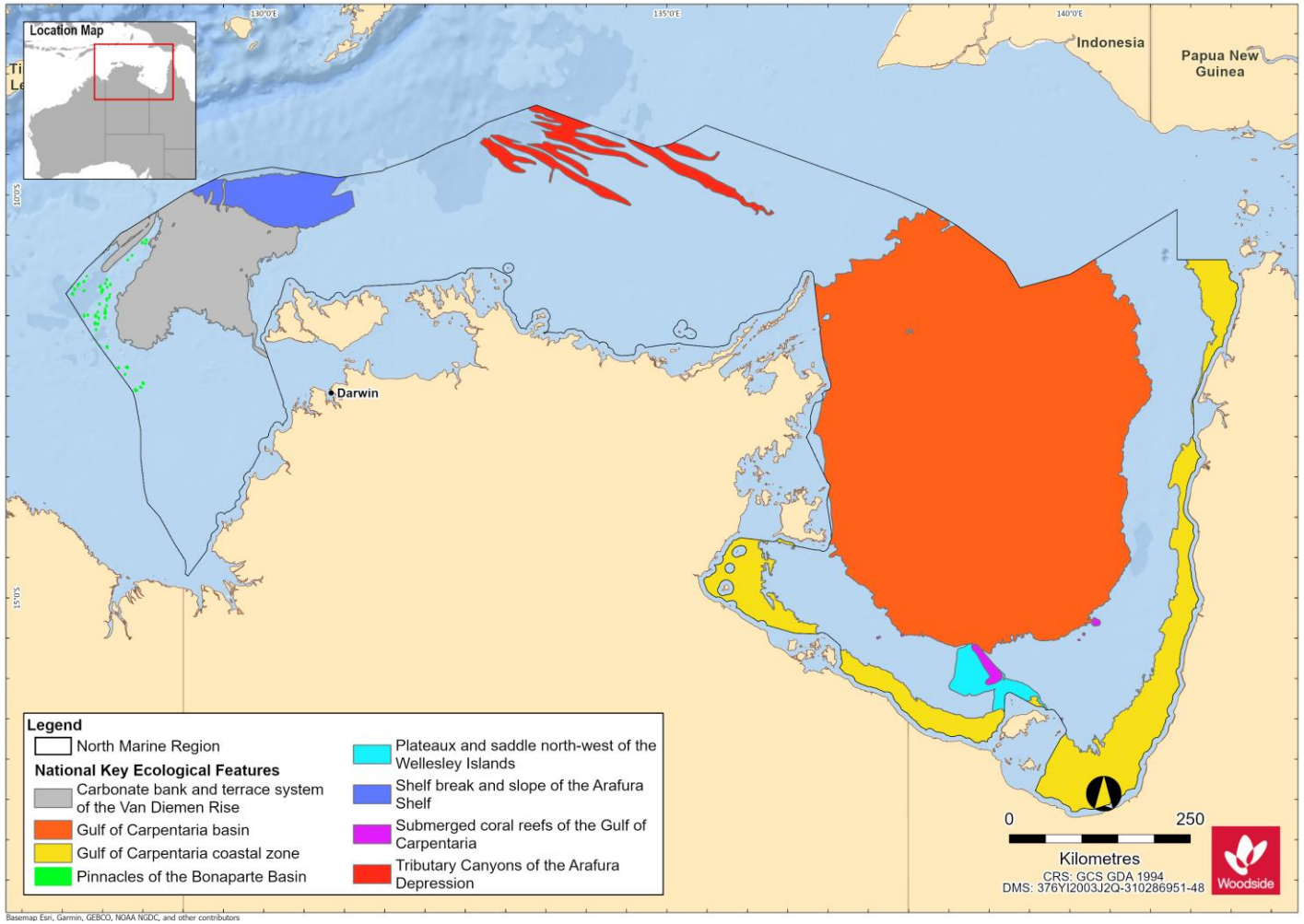

Figure 9-3. Key Ecological Features (KEFs) within the NMR

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10. PROTECTED AREAS

10.1 Regional Context

Protected areas included 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**) shows that there are twenty-nine protected areas found in the NWMR, eighteen in the SWMR and nine in the NMR.

Table 10-1, Table 10-2 and **Table 10-3** outline the protected areas of each of the marine regions NWMR, SWMR and NMR, respectively.

10.2 World Heritage Properties

Properties nominated for World Heritage listing are inscribed on the list only after they have been carefully assessed as representing the best examples of the world's cultural and natural heritage. Only World Heritage listings classed as natural are discussed in this section. World Heritage sites classed as cultural are discussed in **Section 11**.

The list of Australia's World Heritage Properties and the PMST Reports (**Appendix A**) show two World Heritage Properties within the NWMR (**Table 10-1**), no World Heritage Properties within the SWMR (**Table 10-2),** and though not reported in the NMR PMST Report, Kakadu National Park and World Heritage Area is included in **Table 10-3**.

10.3 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 11**.

A search of the National Heritage List Spatial Database and the PMST Reports (**Appendix A**) identified three natural National Heritage Places in the NWMR (**Table 10-1**), three in the SWMR (**Table 10-2**) and for the NMR, Kakadu National Park (not included in the PMST report) is included in **Table 10-3**.

A search of the Commonwealth Heritage List identified four natural commonwealth heritage places within the NWMR (**Table 10-1**).

10.4 Wetlands of International Importance (listed under the Ramsar Convention)

Australia has 65 Ramsar wetlands that cover >8.3 million ha. Ramsar wetlands are those that are representative, rare, or unique wetlands, or that are important for conserving biological diversity.

The List of Wetlands of International Importance held under the Ramsar Convention and the PMST Reports (**Appendix A**) identified four Ramsar Sites with coastal features within the NWMR (**Table 10-1**), four in the SWMR (**Table 10-2**) and two for the New Territory, included for the NMR (**Table 10-3**).

10.5 Australian Marine Parks

Australian Marine Parks (AMPs), proclaimed under the EPBC Act in 2007 and 2013, are located in Commonwealth waters that start at the outer edge of State and Territory waters, generally three

nautical miles (~5.5 km) from the shore, and extend to the outer boundary of Australia's EEZ, 200 nm (~370 km) from the shore.

PMST Reports (**Appendix A**) show sixteen AMPs within the NWMR (**Table 10-1**), ten within the SWMR (**Table 10-2**) and eight within the NMR (**Table 10-3**).

10.6 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, SWMR or NMR as indicated by the PMST Reports (**Appendix A**).

10.7 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 EEZ (i.e. out to 200 nm and further in some places). Within the Sanctuary it is an offence to kill, injure or interfere with a cetacean. Severe penalties apply to anyone convicted of such offences.

10.8 State Marine Parks and Reserves

State Marine Parks and Reserves, proclaimed under the *Conservation and Land Management Act 1984* (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 14 occurring in the NWMR (**Table 10-1**) and six occurring in the SWMR (**Table 10-2**).

10.9 Summary of Protected Areas within the NWMR

Table 10-1 Protected Areas within the NWMR

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
World Heritage Properties						
Shark Bay World Heritage Property	-	-	✓		The Shark Bay World Heritage Property is adjacent to the Shark Bay AMP and was included on the World Heritage List in 1991.	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.
The Ningaloo Coast World Heritage Property	-	-	✓		The Ningaloo Coast World Heritage Property lies within the Ningaloo AMP and was included on the World Heritage List in 2011.	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.
National Heritage Places - Natural						
Shark Bay	-	-	✓		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.	The 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.
The Ningaloo Coast	-	-	✓		The Ningaloo Coast National Heritage Place consists of the same area included in the Ningaloo	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.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					Coast World Heritage Property (refer above) and was established on the National Heritage List in 2010.	The Ningaloo Coast meets the national heritage listing criteria a, b, c, d, and f.
The West Kimberley	✓	✓	-		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.	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. The national heritage place also contains a remarkable history of Aboriginal 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 Heritage Places - Natural						
Mermaid Reef – Rowley Shoals	-	✓	-	N/A	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.	The Mermaid Reef-Rowley Shoals Commonwealth Heritage Place is regionally important for the diversity of its fauna and together with Clerke and Imperieuse reefs, has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fishes known previously only from Indonesian waters. Rowley Shoals is important for benchmark studies as one of the few places off the north-west coast of Western Australia which have been the site of major biological collection trips by the WA Museum.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Ashmore Reef National Nature Reserve	✓	-	-		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.	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.
Scott Reef and Surrounds – Commonwealth Area	✓	-	-		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.	The Scott Reef and Surrounds Commonwealth Heritage Place is regionally important for the diversity of its fauna and has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fish known previously only from Indonesian waters. Scott Reef is recognised as important for scientific research and benchmark studies due to its age, the extensive documentation of its geophysical and physical environmental characteristics and its use as a site of major biological collection trips and surveys by the WA Museum and the Australian Institute of Marine Science.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Ningaloo Marine Area – Commonwealth Waters	-	-	✓		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.	The Ningaloo Marine Area Commonwealth Heritage Place provides a migratory pathway for humpback whales and foraging habitat for whale sharks. 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 sharks, fish and oceanography.
Wetlands of International Importance (Ramsar)						
Ashmore Reef National Nature Reserve	✓	-	-	Ramsar	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.	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 WA 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.
Eighty Mile Beach	-	✓	-	Ramsar	The Eighty Mile Beach Ramsar site covers an area of 1250 km^2, located along a long section of the Western Australian coastline adjacent to the Eighty Mile Beach AMP (refer below).	The Eighty Mile Beach Ramsar site includes saltmarsh and a raised peat bog more than 7000 years old. The site contains the most important wetland for waders in north-western Australia, supporting up to 336,000 birds, and is especially important as a land fall for waders migrating south for the austral summer.
Roebuck Bay	-	✓	-	Ramsar	The Roebuck Bay Ramsar site covers an area of 550	The Roebuck Bay Ramsar site is recognised as one of the most important areas for migratory shorebirds in Australia.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					km^2, located south of Broome and adjacent to the Roebuck AMP (refer below).	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.
Ord River Floodplain	✓			Ramsar	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 Ramsar Site is a nursery, feeding and/or breeding ground for migratory birds, waterbirds, fish, crabs, prawns, and crocodiles.	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.
Wetlands of National Importance (DAWE, 2019)						
Ashmore Reef	✓	-	-		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.	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.
Mermaid Reef	-	✓	-		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.	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.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Exmouth Gulf East	-	-	✓		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.	The Exmouth Gulf East is an outstanding example of tidal wetland systems of low coast of north-west Australia, with well- developed tidal creeks, extensive mangrove swamps and broad saline coastal flats. The site is one of the major population centres for dugong in WA and its seagrass beds and extensive mangroves provide nursery and feeding areas for marine fishes and crustaceans in the Gulf. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia.
Hamelin Pool	-	-	✓		Hamelin Pool covers an area of 900 km^2 in the far south-east part of Shark Bay.	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.
Shark Bay East	-	-	✓		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.	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.
Australian Marine Parks (DNP, 2018a)						
Abrolhos Marine Park	-	-	✓	II, IV, VI	Abrolhos Marine Park is located adjacent to the WA Houtman Abrolhos Islands, covering a large offshore	Abrolhos Marine Park is significant because it contains habitats, species and ecological communities associated with four bioregions:

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					area of 88,060 km^2 extending from the WA State waters boundary to the edge of Australia's EEZ. The Abrolhos Marine Park is located within both the NWMR and SWMR.	• Central Western Province • Central Western Shelf Province • Central Western Transition • South-west Shelf Transition It includes seven KEFs: 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 at 90-120 m depth; and Wallaby Saddle. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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 AMP is adjacent to the northernmost Australian sea lion breeding colony in Australia on the Houtman Abrolhos Islands.
Carnarvon Canyon Marine Park	-	-	✓	IV	Carnarvon Canyon Marine Park covers an area of 6177 km^2, located ~300 km north-west of Carnarvon.	Carnarvon Canyon Marine Park is significant because it contains habitats, species and ecological communities associated with the Central Western Transition bioregion. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. There is limited information about species' use of this AMP.
Shark Bay Marine Park	-	-	✓	VI	Shark Bay Marine Park covers an area of 7443 km^2 located ~60 km offshore of Carnarvon, adjacent to the Shark Bay World Heritage Property and National Heritage Place.	Shark Bay Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: • Central Western Shelf Province • Central Western Transition. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
						the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, internesting habitat for marine turtles, and a migratory pathway for humpback whales.
Gascoyne Marine Park	-	-	✓	II, IV, VI	Gascoyne Marine Park covers an area of 81,766 km^2, located ~20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Marine Park.	Gascoyne Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions: • Central Western Shelf Transition • Central Western Transition • Northwest Province. It includes four KEFs: 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. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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.
Ningaloo Marine Park	-	-	✓	II, IV	Ningaloo Marine Park covers an area of 2435 km^2, stretching ~300 km along the west coast of the Cape Range Peninsula, and is adjacent to the WA Ningaloo Marine Park and Gascoyne Marine Park.	Ningaloo Marine Park is significant because it contains habitats, species and ecological communities associated with four bioregions: • Central Western Shelf Transition • Central Western Transition • Northwest Province • Northwest Shelf Province. It includes three KEFs: Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; Commonwealth waters adjacent to Ningaloo Reef; and Continental slope demersal fish communities. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
						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.
Montebello Marine Park	-	✓	-	VI	Montebello Marine Park covers an area of 3413 km^2, located offshore of Barrow Island and 80 km west of Dampier extending from the WA State waters boundary, and is adjacent to the WA Barrow Island and Montebello Islands Marine Parks.	Montebello Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province bioregion. It includes one KEF: Ancient coastline at 125 m depth contour. The AMP supports a range of species including species listed as threatened, migratory, marine 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.
Dampier Marine Park	-	✓	-	II, IV, VI	Dampier Marine Park covers an area of 1252 km^2, located ~10 km north-east of Cape Lambert and 40 km from Dampier extending from the WA State waters boundary.	Dampier Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province bioregion. The AMP provides protection for offshore shelf habitats adjacent to the Dampier Archipelago, and the area between Dampier and Port Hedland, and is a hotspot for sponge biodiversity. The AMP supports a range of species including those listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting habitat for marine turtles and a migratory pathway for humpback whales.
Eighty Mile Beach Marine Park	-	✓	-	VI	Eighty Mile Beach Marine Park covers an area of 10,785 km^2, located ~74 km north-east of Port Hedland, adjacent to the	Eighty Mile Beach Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province and consists of shallow shelf habitats, including terrace, banks and shoals.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					WA Eighty Mile Beach Marine Park.	The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding, foraging and resting habitat for seabirds, internesting and nesting habitat for marine turtles, foraging, nursing and pupping habitat for sawfishes and a migratory pathway for humpback whales.
Argo – Rowley Terrace Marine Park	✓	✓	-	II, VI, VI (Trawl)	Argo-Rowley Terrace Marine Park covers an area of 146,003 km^2, located ~270 km north-west of Broome, and extends to the limit of Australia's EEZ. The AMP is adjacent to the Mermaid Reef Marine Park and the WA Rowley Shoals Marine Park.	Argo–Rowley Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: • Northwest Transition • Timor Province. It includes two KEFs: Canyons linking the Argo Abyssal Plain with the Scott Plateau; and Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include resting and breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
Mermaid Reef Marine Park	-	✓	-	II	Mermaid Reef Marine Park covers an area of 540 km^2, located ~280 km north-west of Broome, adjacent to the Argo–Rowley Terrace Marine Park and ~13 km from the WA Rowley Shoals Marine Park. Mermaid Reef is one of three reefs forming the Rowley Shoals. The other two are Clerke Reef and Imperieuse Reef, to the	Mermaid Reef Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Transition. It includes one KEF: Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The Rowley Shoals have been described as the best geological examples of shelf atolls in Australian waters. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					south-west of the AMP, which are included in the WA Rowley Shoals Marine Park.	
Roebuck Marine Park	-	✓	-	VI	Roebuck Marine Park covers an area of 304 km^2, located ~12 km offshore of Broome, and is adjacent to the WA Yawuru Nagulagun/Roebuck Bay Marine Park.	Roebuck Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province and consists entirely of shallow continental shelf habitat. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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.
Kimberley Marine Park	✓	✓	-	II, IV, VI	Kimberley Marine Park covers an area of 74,469 km^2, located ~100 km north of Broome, extending from the WA State waters boundary north from the Lacepede Islands to the Holothuria Banks offshore from Cape Bougainville.	Kimberley Marine Park is significant because it includes habitats, species and ecological communities associated with three bioregions: • Northwest Shelf Province • Northwest Shelf Transition • Timor Province. It includes two KEFs: Ancient coastline at 125 m depth contour; and Continental slope demersal fish communities. The AMP supports a range of species, including protected species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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.
Ashmore Reef Marine Park	✓	-	-	Ia, IV	Ashmore Reef Marine Park covers an area of 583 km^2, located ~630 km north of	Ashmore Reef Marine Park is significant because it includes habitats, species and ecological communities associated with the Timor Province. It includes two KEFs:

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					Broome and 110 km south of the Indonesian island of Roti. The AMP is located in Australia's External Territory of Ashmore and Cartier Islands and is within an area subject to a Memorandum of Understanding (MoU) between Indonesia and Australia, known as the MoU Box.	Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and Continental slope demersal fish communities. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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.
Cartier Island Marine Park	✓	-	-	Ia	Cartier Island Marine Park covers an area of 172 km^2, located ~45 km south-east of Ashmore Reef Marine Park and 610 km north of Broome. It is also located in Australia's External Territory of Ashmore and Cartier Islands and within an area subject to an MoU between Indonesia and Australia, known as the MoU Box.	Cartier Island Marine Park is significant because it includes habitats, species and ecological communities associated with the Timor Province. It includes two key ecological features: Ashmore Reef and Cartier Island and surrounding Commonwealth waters and continental slope demersal fish communities. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting, nesting and foraging habitat for marine turtles and foraging habitat for whale sharks. The AMP is also internationally significant for its abundance and diversity of sea snakes, some of which are listed species under the EPBC Act.
Joseph Bonaparte Gulf Marine Park	✓	-	-	VI	Joseph Bonaparte Gulf Marine Park covers an area of 8597 km^2 and is located ~15 km west of Wadeye, NT, and ~90 km north of Wyndham, WA, in the Joseph Bonaparte Gulf.	Joseph Bonaparte Gulf Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Transition bioregion. It includes one KEF: Carbonate bank and terrace system of the Sahul Shelf. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					It is adjacent to the WA North Kimberley Marine Park. The Joseph Bonaparte Gulf Marine Park is located within both the NWMR and NMR.	the EPBC Act. BIAs within the AMP include foraging habitat for marine turtles and the Australian snubfin dolphin.
Oceanic Shoals Marine Park	✓	-	-	II, IV, VI	Oceanic Shoals Marine Park covers an area of 71,743 km^2 and is located west of the Tiwi Islands, ~155 km north-west of Darwin, NT and 305 km north of Wyndham, WA. The Oceanic Shoals Marine Park is located within both the NWMR and NMR.	Oceanic Shoals Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Transition bioregion. It contains four KEFs: Carbonate bank and terrace systems of the Van Diemen Rise; Carbonate bank and terrace systems of the Sahul Shelf; Pinnacles of the Bonaparte Basin; and Shelf break and slope of the Arafura Shelf. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging and internesting habitat for marine turtles.
State Marine Parks and Reserves						
North Kimberley Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	The North Kimberley Marine Park covers approx. 18,450 km^2 with its south-western boundary located ~270 km north-east of Derby.	The coral reefs of the north Kimberley have the greatest diversity in Western Australia and are some of the most pristine and remarkable reefs in the world. The park surrounds more than 1000 islands and is home to listed species such as dugongs, marine turtles, and sawfishes (DPAW, 2016a).
Lalang-garram / Horizontal Falls Marine Park and North Lalang-garram Marine Park (jointly managed)	✓	-	-	Sanctuary, Special Purpose and General Use Zones	The Lalang-garram / Horizontal Falls Marine Park covers ~3530 km^2 from Talbot Bay in the west and Glenelg River in the east. The North Lalang-garram Marine Park covers ~1100	The Lalang-garram / Horizontal Falls Marine Park's most celebrated attraction 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. The North Lalang-garram Marine Park has a number of islands fringed with coral reef and has been identified as an

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					km^2 between Camden Sound and North Kimberley Marine Parks.	ecological hotspot and supports more than 1% of the world's population of brown boobies, with up to 2000 breeding pairs. About 500 pairs of crested terns also nest on the island (DPAW, 2016b).
Lalang-garram / Camden Sound Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	Lalang-garram / Camden Sound Marine Park covers 7050 km^2 located about 150 km north of Derby.	The Lalang-garram / 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, dugongs, saltwater crocodiles, and several species of sawfish (DPAW, 2013).
Rowley Shoals Marine Park	-	✓	-	Sanctuary, Recreation and General Use Zones	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.	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. Further offshore, the seafloor slopes away to the abyssal plain, some 6000 m below. Undersea canyons slice the slope; these features are commonly associated with diverse communities of deep-water corals and sponges and create localised upwellings that aggregate pelagic species like tunas and billfish (DEC, 2007a).
Yawuru Nagulagun / Roebuck Bay Marine Park	-	✓	-	Special Purpose Zone	Yawuru Nagulagun / Roebuck Bay Marine Park is a series of intertidal flats lying on the coast to the south-east of Broome.	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 turtle (DPAW, 2016c).
Eighty Mile Beach Marine Park	-	✓	-	Sanctuary, Recreation, Special	Eighty Mile Beach Marine Park covers ~2000 km^2 stretching across 220km of	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

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
				Purpose and General Use Zones	coastline between Port Hedland and Broome.	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, 2014).
Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area (jointly managed)	-	✓	-	Sanctuary, Recreation, General Use and Special Purpose Zones	The Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area are located off the north-west coast of WA, ~1600 km north of Perth, and cover areas of ~583 km^2, 42 km^2 and 1,147 km^2, respectively.	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).
Ningaloo Marine Park and Muiron Islands Marine Management Area (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	The Ningaloo Marine Park and Muiron Islands Marine Management Area are located off the North-west Cape of WA, ~1200 km north of Perth, and cover areas of ~2633 km^2 and 286 km^2, respectively.	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).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Shark Bay Marine Park and Hamelin Pool Marine Nature Reserve (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	The Shark Bay Marine Park and Hamelin Pool Marine Nature Reserves are located 400 km north of Geraldton, covering areas of ~7487 km^2 and 1270 km^2, respectively.	Seagrass covers over 4000 km^2 of the Shark Bay Marine Park, with 12 different species making it one of the most diverse seagrass assemblages in the world. Dugongs regularly use this habitat, with the bay containing one of the largest dugong populations in the world. Humpback whales also use the bay as a staging post in their migration along the coast. Green and loggerhead turtles occur in the bay with Dirk Hartog Island providing the most important nesting site for loggerheads in Western Australia. Hamelin Pool contains the most diverse and abundant examples of stromatolites found in the world. These are living representatives of stromatolites that existed some 3500 million years ago (CALM, 1996).

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: national Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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

IUCN categories for the marine park are provided and, in brackets, the IUCN categories for specific zones within each Marine Park as assigned under the North-west Marine Parks Network Management Plan 2018 (DNP, 2018a)

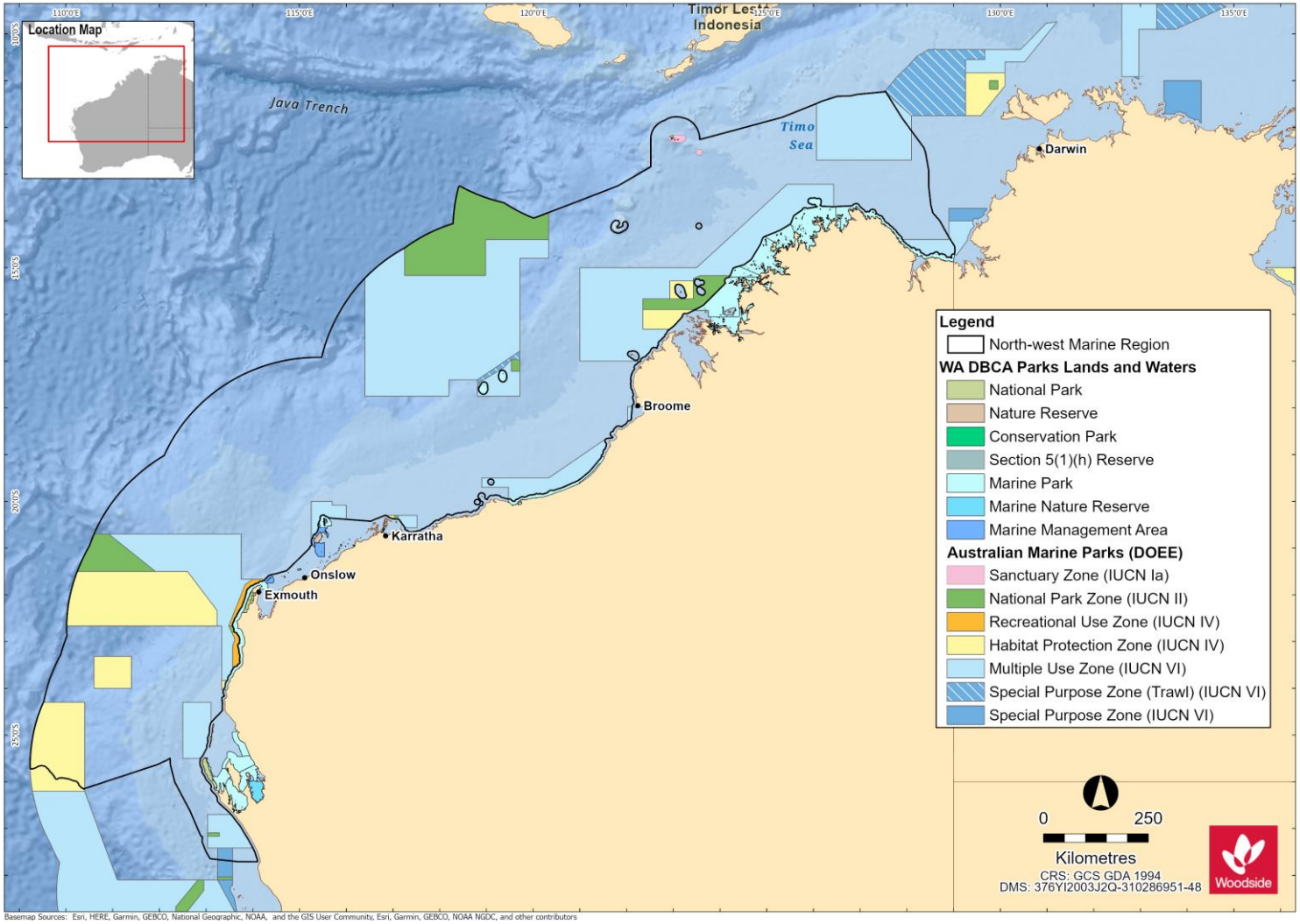

Figure 10-1 Commonwealth and State Marine Protected Areas for the NWMR

10.10 Summary of Protected Areas within the SWMR

Table 10-2 Protected Areas within the SWMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
World Heritage Properties			
N/A			
National Heritage Places - Natural			
N/A			
Commonwealth Heritage Places - Natural			
N/A			
Wetlands of International Importance (Ramsar)			
Beecher Point Wetlands	Ramsar	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.	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 TEC. At least four species of amphibians and twenty-one (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.
Forrestdale and Thomsons Lakes	Ramsar	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.	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.
Peel-Yalgorup System	Ramsar	Peel-Yalgorup System, located adjacent to the City of Mandurah in	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

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		WA, 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.	wide variety of waterbird species. It also supports a wide variety of invertebrates, and estuarine and marine fish. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention.
Vasse-wonnerup system	Ramsar	Vasse-Wonnerup System Ramsar wetland is situated in the Perth Basin, south-western WA. The site was listed under the Ramsar Convention in 1990.	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. Vasse-Wonnerup System supports tens of thousands of resident and migrant waterbirds of a wide variety of species. More than 80 species of waterbird have been recorded in the System such as red-necked avocets and black-winged stilts, wood sandpiper, sharp-tailed sandpiper, long-toed stint, curlew sandpiper and common greenshank. Thirteen 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.
Wetlands of National Importance (DAWE, 2019)			
Rottnest Island Lakes		The Rottnest Island Lakes site is the cluster of 18 lakes and swamps on the north-east part of Rottnest Island.	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.
Australian Marine Parks (DNP, 2018b)			
Abrolhos Marine Park	II, IV, VI	The Abrolhos Marine Park is located within both the NWMR and SWMR. Refer **Table 10-1** for description and conservation values.	
Bremer Marine Park	II, VI	Bremer Marine Park covers an area of 4472 km^2 and is located approximately half-way between Albany and Esperance, offshore from the Fitzgerald River National Park, extending from the WA State waters boundary.	Bremer Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: • Southern Province • South-west Shelf Province. It includes two KEFs: Albany Canyon group and adjacent shelf break; and Ancient coastline at 90-120 m depth.

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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. The AMP includes canyons—important aggregation areas for killer whales.
Eastern Recherche Marine Park	II, VI	Eastern Recherche Marine Park covers an area of 20,575 km^2 and is located ~135 km east of Esperance, adjacent to the Recherche Archipelago, close to the WA Cape Arid National Park.	Eastern Recherche Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions: • South-west Shelf Province • Southern Province • Great Australian Bight Shelf Transition. It includes three KEFs: Mesoscale eddies; Ancient coastline at 90-120 m depth; and Commonwealth marine environment surrounding the Recherche Archipelago. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
Geographe Marine Park	II, IV, VI	Geographe Marine Park covers an area of 977 km^2 and is located in Geographe Bay, ~8 km west of Bunbury and 8 km north of Busselton, adjacent to the WA Ngari Capes Marine Park.	Geographe Marine Park is significant because it contains habitats, species and ecological communities associated with the South-west Shelf Province bioregion. It includes two KEFs: Commonwealth marine environment within and adjacent to Geographe Bay; and Western rock lobster. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.
Great Australian Bight Marine Park	II, VI	Great Australian Bight Marine Park covers an area of 45,822 km^2 and is located ~12 km south-east of Eucla and 174 km west of Ceduna, adjacent to the SA Far West Coast and Nuyts Archipelago Marine Parks.	Great Australian Bight Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: • Great Australian Bight Shelf Transition • Southern Province. It includes three KEFs: Ancient coastline at 90-120 m depth; Benthic invertebrate communities of the eastern Great Australian Bight; and Small pelagic fish of the South-west Marine Region. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions, white sharks and

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			pygmy blue and sperm whales, and a calving area, migratory pathway and large aggregation area for southern right whales.
Jurien Marine Park	II, VI	Jurien Marine Park covers an area of 1851 km^2 and is located ~148 km north of Perth and 155 km south of Geraldton, adjacent to the WA Jurien Bay Marine Park.	Jurien Marine Park is significant because it includes habitats, species and ecological communities associated with two bioregions: • South-west Shelf Transition • Central Western Province. It includes three KEFs: Ancient coastline at 90-120 m depth; Demersal slope and associated fish communities of the Central Western Province; and Western rock lobster The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales.
Perth Canyon Marine Park	II, IV, VI	Perth Canyon Marine Park covers an area of 7409 km^2 and is located ~52 km west of Perth and ~19 km west of Rottnest Island.	Perth Canyon Marine Park is significant because it includes habitats, species and ecological communities associated with four bioregions: • Central Western Province • South-west Shelf Province • Southwest Transition • South-west Shelf Transition. It includes four KEFs: 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. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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.
South-west Corner Marine Park	II, IV, VI	South-west Corner Marine Park covers an area of 271,833 km^2 and is located adjacent to the WA Ngari Capes Marine Park. It covers an extensive offshore area that is closest to WA State waters ~48 km west of Esperance, 73 km west of Albany and 68 km west of Bunbury.	South-west Corner Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions: • Southern Province • South-west Transition • South-west Shelf Province. It includes six KEFs: Albany Canyon group and adjacent shelf break; Cape Mentelle upwelling; Diamantina Fracture Zone; Naturaliste Plateau; Western rock lobster; and Ancient coastline at 90 m-120 m depth.

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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.
Twilight Marine Park	II, VI	Twilight Marine Park covers an area of 4641 km^2 and is located ~245 km south-west of Eucla and 373 km north-east of Esperance, adjacent to the WA State waters boundary.	Twilight Marine Park is significant because it contains habitats, species and ecological communities associated with the Great Australian Bight Shelf Transition bioregion. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
Two Rocks Marine Park	II, VI	Two Rocks Marine Park covers an area of 882 km^2 and is located ~25 km north-west of Perth, to the north-west of the WA Marmion Marine Park.	Two Rocks Marine Park is significant because it includes habitats, species and ecological communities associated with the South-west Shelf Transition bioregion. It includes three KEFs: Commonwealth marine environment within and adjacent to the west-coast inshore lagoons; Western rock lobster; and Ancient coastline at 90-120 m depth. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP 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.
State Marine Parks and Reserves			
Jurien Bay Marine Park	Sanctuary, Special Purpose and General Use Zones.	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.	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).
Marmion Marine Park	Sanctuary, Recreation and Special Use Zones.	The Marmion Marine Park lies within State waters between Trigg Island and Burns Beach and encompasses a coastal area of ~95 km^2. Marmion	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, to a general use zone and the Waterman Recreation Area. The marine park contains important habitat for the endemic Australian

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		Marine Park was the State's first marine park, declared in 1987.	sea lion, an array of seabird species migratory whales are regular visitors (CALM, 1992; DPAW, 2016d).
Swan Estuary Marine Park	Special Purpose and Nature Reserve Zones.	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.	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. The Park and adjacent reserves also provide habitat for a diverse assemblage of aquatic and terrestrial flora and fauna (CALM, 1999).
Shoalwater Islands Marine Park	Sanctuary, Special Purpose and General Use Zones.	The Shoalwater Islands Maine Park is located adjacent to Rockingham on the south-west coast of WA, ~50 km south of Perth and covers an area of ~66 km^2.	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 the 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).
Ngari Capes Marine Park	Sanctuary, Special Purpose and Recreation Zones.	The Ngari Capes Marine Park is located off the south-west coast of WA, ~250 km south of Perth, covering ~1238 km^2.	The Ngari Capes Marine Park consists of a complex arrangement of sandy bays, high energy limestone and granite reefs bordered by headlands and cliffs and two weathered capes. Coral communities consist of both tropical and temperate species. Cetaceans and pinnipeds are resident in and/or transient through the marine park as well as a diverse range of seabirds and shorebirds (DEC, 2013).
Walpole and Nornalup Inlets Marine Park	Recreation Zone.	The Walpole and Nornalup Inlets Marine Park is located adjacent to the towns of Walpole and Nornalup on the south coast of WA, ~120 km west of Albany, and covers ~14 km^2.	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 the marine park (DEC, 2009).

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: national Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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

IUCN categories for the marine park are provided and, in brackets, the IUCN categories for specific zones within each Marine Park as assigned under the South-west Marine Parks Network Management Plan 2018 (DNP, 2018b)

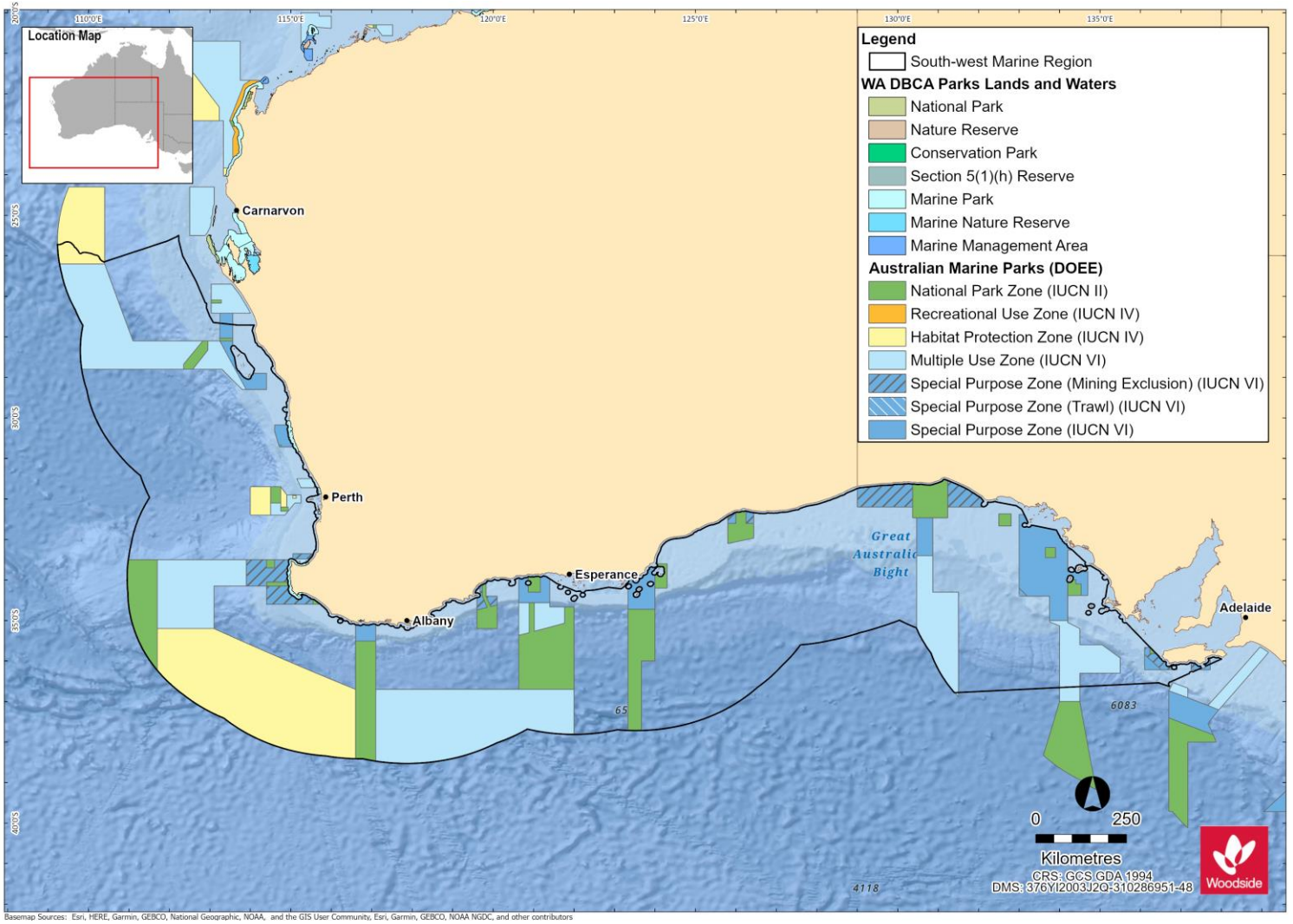

Figure 10-2. Commonwealth and State Marine Protected Areas for the SWMR

10.11 Summary of Protected Areas within the NMR

Table 10-3 Protected Areas within the NMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
World Heritage Properties			
Kakadu National Park		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 the World Heritage list in three stages over 11 years. It is located in tropical north Australia covering a total area of 19,804 square kilometres.	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.
National Heritage Places - Natural			
Kakadu National Park		Refer to World Heritage property description above.	Refer to World Heritage property conservation values above
Commonwealth Heritage Places - Natural			
N/A			
Wetlands of International Importance (Ramsar)			
Kakadu National Park		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.	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.

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
Cobourg Peninsula		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.	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.
Wetlands of National Importance (DAWE, 2019)			
Southern Gulf Aggregation		The site is a complex continuous wetland aggregation in the Gulf of Carpentaria, covering an area of ~5460 km^2 located 58 km east of Burketown, Queensland.	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.
Australian Marine Parks (DNP, 2018c)			
Arafura Marine Park	VI	Arafura Marine Park covers an area of 22,924 km^2 is located ~256 km north-east of Darwin and 8 km offshore of Croker Island, NT. It extends from NT waters to the limit of Australia's EEZ.	The AMP is significant because it contains habitats, species and ecological communities associated with two bioregions: • Northern Shelf Province • Timor Transition. It includes one KEF: Tributary canyons of the Arafura Depression. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include internesting habitat for marine turtles and important foraging and breeding habitat for seabirds.
Arnhem Marine Park	VI	Arnhem Marine Park covers an area of 7125 km^2 and is located ~100 km south-east of Croker Island and 60 km south-east of the Arafura Marine Park. It extends from NT waters surrounding the Goulburn Islands, to the waters north of Maningrida.	Arnhem Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf Province bioregion. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat and a migratory pathway for marine turtles and seabirds.
Gulf of Carpentaria Marine Park	II, VI	Gulf of Carpentaria Marine Park covers an area of 23,771 km^2 and is located ~90 km north-west of Karumba, Queensland and is adjacent to the Wellesley Islands in	Gulf of Carpentaria Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf Province bioregion.

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		the south of the Gulf of Carpentaria basin.	It includes four KEFs: 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. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging areas for seabirds and internesting and foraging areas for turtles.
Joseph Bonaparte Gulf Marine Park	VI	The Joseph Bonaparte Gulf Marine Park is located within both the NWMR and NMR. Refer **Table 10-1** for description and conservation values.	
Limmen Marine Park	IV	Limmen Marine Park covers an area of 1399 km^2 and is located ~315 km south-west of Nhulunbuy, NT, in the south-west of the Gulf of Carpentaria. It extends from NT waters, between the Sir Edward Pellew Group of Islands and Maria Island in the Limmen Bight, adjacent to the NT Limmen Bight Marine Park.	Limmen Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf bioregion. It includes one KEF: Gulf of Carpentaria coastal zone. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include internesting and foraging habitat for marine turtles.
Oceanic Shoals Marine Park	II, IV, VI	The Oceanic Shoals Marine Park is located within both the NWMR and NMR. Refer **Table 10-1** for description and conservation values.	
Wessel Marine Park	IV, VI	Wessel Marine Park covers an area of 5908 km^2 and is located ~22 km east of Nhulunbuy, NT. It extends from NT waters adjacent to the tip of the Wessel Islands to NT waters adjacent to Cape Arnhem.	Wessel Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf bioregion. It includes one KEF: Gulf of Carpentaria basin. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds and internesting and foraging habitat for marine turtles.
West Cape York Marine Park	II, IV, VI	West Cape York Marine Park covers an area of 16,012 km^2 and is located adjacent to the northern end	West Cape York Marine Park is significant because it contains species and ecological communities associated with two bioregions: • Northeast Shelf Transition

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		of Cape York Peninsula ~25 km south-west of Thursday Island and 40 km north-west of Weipa, Queensland.	• Northern Shelf Province. It includes two KEFs: Gulf of Carpentaria basin; and Gulf of Carpentaria coastal zone. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting and foraging habitat for marine turtles and dugong, and foraging, breeding and calving habitat for dolphins.
Territory Marine Parks and Reserves			
Cobourg Marine Park	II, IV, VI	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. The Marine Park is part of the larger Garig Gunak Barlu National Park. Garig Gunak Barlu National Park includes both the Marine Park and the Cobourg Sanctuary.	Cobourg Marine Park is located in the Cobourg and Van Diemen Gulf marine bioregions with the northern portion of the Park covered by the Cobourg marine bioregion and the southern portion covered by the Van Diemen Gulf marine bioregion. The 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 Park. The areas of the Park that have been studied and where extensive collections have been made indicates that the Park supports rich and diverse marine life including live coral reefs, seagrass, diverse reef and pelagic fish populations, marine turtles and dugong.

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: National Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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

IUCN categories for the marine park are provided and, in brackets, the IUCN categories for specific zones within each Marine Park as assigned under the North Marine Parks Network Management Plan 2018 (DNP, 2018c)

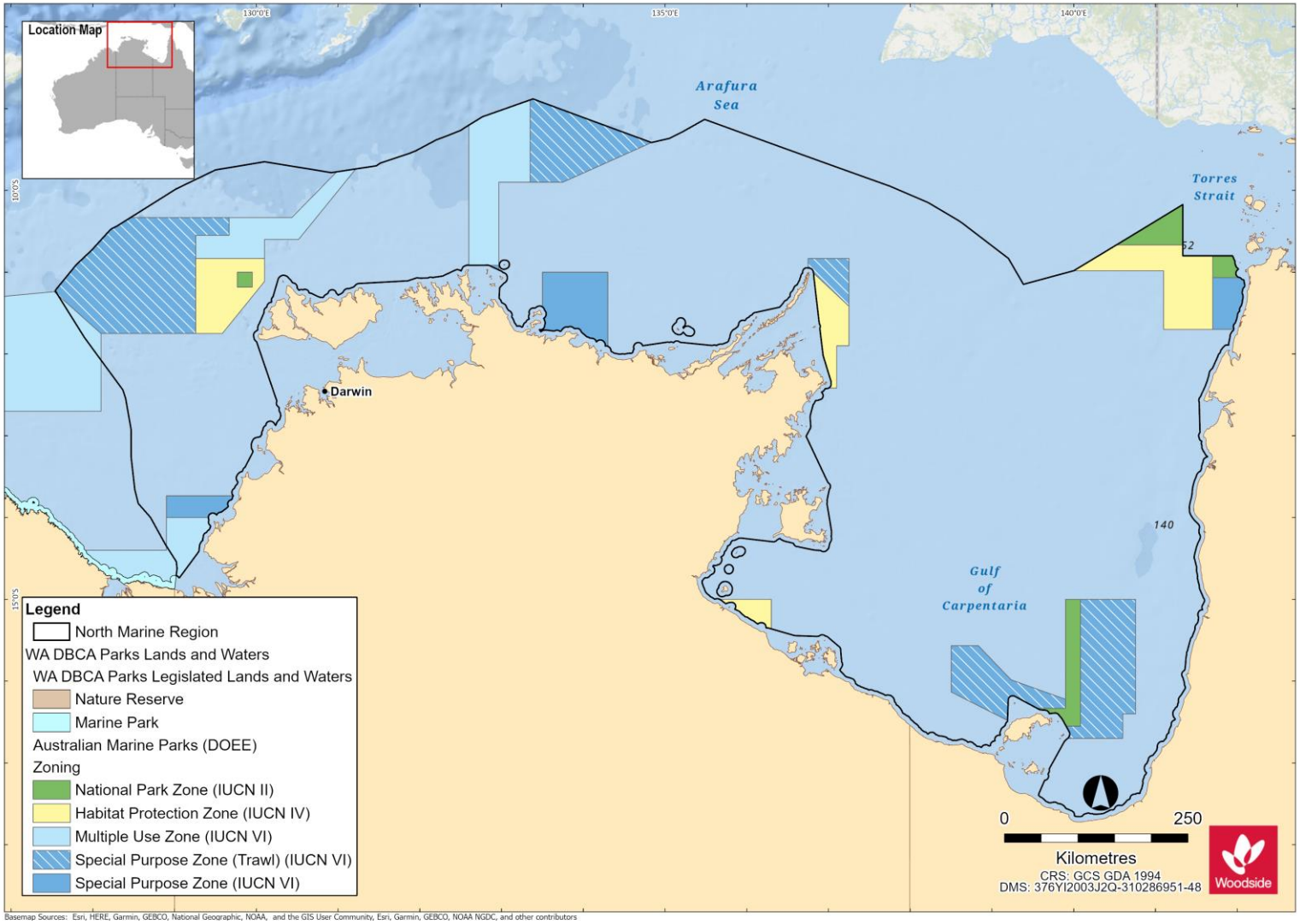

Figure 10-3. Commonwealth and State Marine Protected Areas within the NMR

11. SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

This section summarises the information relating to the socio-economic and cultural environment of the regions offshore Western Australia, with a focus on the NWMR and to a lesser extent the SWMR and NWR.

The cultural environment includes Indigenous and European heritage values, including underwater values such as historic shipwrecks. Socio-economic values include commercial and traditional fishing, tourism and recreation, shipping, oil and gas activities and defence activities.

11.1 Cultural Heritage

11.1.1 Indigenous 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 Aboriginal cosmology, Dreaming stories and songs through the stories, knowledge and customs that are still held by traditional custodians.

In 2007 the Dampier Archipelago (including the Burrup Peninsula) was included on the National Heritage List due to outstanding heritage values relating to Australia's cultural history contained in the large number, density, diversity, distribution and fine execution of rock art. Within the National Heritage Place, the Murujuga National Park covers 4913 ha and is co-managed by the Murujuga Aboriginal Corporation and the Department of Biodiversity, Conservation and Attractions. The Murujuga Cultural Landscape was also added to Australia's Tentative World Heritage List in 2020, with full World Heritage Listing anticipated in 2024.

Woodside also recognises the potential for heritage to survive in submerged landscapes. Sea-level rises since the last ice age mean that areas now under the sea were once exposed, that many of today's islands would have been connected to the mainland, and that Aboriginal people are highly likely to have inhabited these places. Woodside works with traditional custodians, academics and heritage professionals to identify tangible and intangible heritage values in the submerged landscape to avoid disturbing heritage where possible and to minimise impacts where heritage cannot be avoided.

It is an offence to excavate, destroy, damage, conceal or alter Indigenous heritage onshore or in state waters under section 17 of the *Aboriginal Heritage Act 1972 (WA) (AHA)* without ministerial 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.

The Department of Planning, Lands and Heritage maintains a register of registered sites and heritage places including middens, burial, ceremonial [sites], artefacts, rock shelters, mythological [sites] and engraving sites. There are over 1600 registered sites on Murujuga and the Dampier Archipelago with around 1100 other heritage places. This register is not comprehensive and will be complemented by heritage surveys where necessary. Protection of National and World Heritage values is also legislated through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*. Murujuga National Park is managed under the *Conservation and Land Management Act 1984 (WA)*.

11.1.2 European Sites of Significance

European sites of significance and heritage value are found along adjacent foreshores of the SWMR, NWMR and NWR. Heritage values are protected in Western Australia under the *Heritage Act 2018*.

11.1.3 Underwater Cultural Heritage

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 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).

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. 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).

The Australian National Shipwreck Database and the WA Maritime Museum Shipwreck Database list these protected wrecks.

11.1.4 National and Commonwealth Listed Heritage Places

Australia's National Heritage Sites are those of outstanding natural, historic and/or Indigenous significance to Australia. National Heritage places classed as natural are discussed in **Section 10.3**. Historic and/or Indigenous National Heritage Listed Places of the NWMR include:

- Dampier Archipelago (including Burrup Peninsula)
- Dirk Hartog Landing Site/Cape Inscription
- HMAS Sydney II and the HSK Kormoran Shipwreck Sites
- Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos

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 10.3**. Listed Heritage Places in the NWMR include:

- Mermaid Reef – Rowley Shoals (refer **Section 10.3**)
- Ashmore Reef National Nature Reserve (refer **Section 10.3**)
- Scott Reef and Surrounds – Commonwealth Area (refer **Section 10.3**)
- Ningaloo Marine Area (refer **Section 10.3**)

World Heritage Properties are those sites that hold universal value which transcends any value they may be held by any one nation. These sites and their qualities are detailed in the Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), to which Australia is a founding member. The Protected Matters Search Report (**Appendix A**) lists two natural World Heritage Properties in the NWMR (refer **Section 10.2**). There are no cultural heritage listings located within the NWMR.

Summary tables of heritage places for NWMR, SWMR and NMR are presented in **Table 11-1,Table 11-2** and **Table 11-3**.

11.2 Summary of Heritage Places within the NWMR

Table 11-1 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						
N/A						

11.3 Summary of Heritage Places within the NMR

Table 11-2 Heritage Places (Indigenous and Historic) within the NMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
None			
Commonwealth Heritage Properties			
None			

11.4 Summary of Heritage Places within the SWMR

Table 11-3 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. Aboriginal 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 Aboriginal 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 the Aboriginal 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.

Heritage Places	Class	Description	Conservation Values
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.
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	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

Heritage Places	Class	Description	Conservation Values
		corner of Garden Island elements of the J Battery complex are now covered in part by sand.	strategic role in the coastal defences of Cockburn Sound and Fremantle following the entry of Japan into the Second World War (1939-45).

11.5 Fisheries - Commercial

11.5.1 Commonwealth and State Fisheries

The diverse range of habitats and species offshore WA has allowed for various fisheries to develop and operate throughout the region.

The Australian Fisheries Management Authority (AFMA) manages fisheries on behalf of the Commonwealth Government and is bound by objectives under the Commonwealth *Fisheries Management Act 1991*.

WA State commercial fisheries are managed by the WA Department of Primary Industries and Regional Development (WA DPIRD) under the WA *Fish Resources Management Act 1994* (FRMA), Fisheries Resources Management Regulations 1995, relevant gazetted notices and licence conditions, and applicable Fishery Management Plans.

Commonwealth and State managed fisheries that operate within the NWMR and in areas beyond this region are summarised in the **Table 11-4**.

Table 11-4 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 (SBTF) 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 and purse seine fishing.	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 *et al*., 2020). SBTF is a fishery that is shared amongst many countries. Australia currently has a 35% share of the total global allowable catch, and while wild capture fishing in Australia to sell directly to market can occur anywhere throughout the SBTF's range, currently the vast majority of that quota is value-added through ranching (on-growing the wild captured fish for 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) (for example as available in Port Lincoln). 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. The stock remains classified as overfished.		
				Active licences/vessels	Seven purse seine vessels, 20 longline vessels (Patterson *et al*., 2020).		
Western Skipjack Tuna Fishery	✓	✓	✓	**Management area**	The combined western and eastern skipjack tuna (*Katsuwonus pelamis*) fisheries (STF) encompass the entire Australian EEZ. The Western Skipjack Tuna Fishery (WSTF) extends westward from the SA/Victorian border across the Great Australian Bight and around the west coast of WA to the Cape York Peninsula.		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				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 (STF) has not been actively fished since the 2008-2009 fishing season (Patterson *et al*., 2020). 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.	
Western Tuna and Billfish Fishery	✓	✓	✓	**Management area**	The Western Tuna and Billfish Fishery (WTBF) extends to the Australian EEZ boundary in the Indian Ocean.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Bigeye tuna (*Thunnus obesus*) Yellowfin tuna (*Thunnus albacares*) Swordfish (*Xiphias gladius*) Albacore (*Thunnus alalonga*) Striped marlin (*Kajikia audax*)	Fishers mainly use pelagic longline fishing gear to catch the targeted species. Minor line (including handline, troll, rod and reel) can also be used.	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 WTBF 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.	
				Active licences/vessels:	Two pelagic longline vessels and two minor longline vessels (Patterson *et al*., 2020).	
Western Deepwater Trawl Fishery			✓	**Management area**	The Western Deepwater Trawl Fishery (WDTF) is located in deep water off WA, from the line approximating the 200 m isobath to the edge of the Australian Fishing Zone (AFZ).	

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><th>Species targeted</th><th>Fishing methods</th><th>Fishing depth</th></tr>
<tr><td>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, stakeholder consultation has indicated that this may be to depths of 800 m.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">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 deepwater bugs (Patterson et al., 2020). Total fishing effort has been variable but relatively low since then. Effort in 2018-2019 (492 trawl hours) was less than half that of 2017-2018 (1108 trawl hours) (Patterson et al., 2020).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">One active vessel in 2018-2019 (Patterson et al., 2020).</td></tr>
</table>
</td></tr>
<tr><td>North-west Slope Trawl Fishery</td><td>✓</td><td>✓</td><td></td><td>
<table>
<tr><td>Management area</td><td colspan="2">The North-west Slope Trawl Fishery (NWSTF) extends, from 114 °E to 125 °E, from the 200 m isobath to the outer limit of the AFZ (200 nm from the coastline, which is the boundary of the Australian EEZ).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Australian scampi (Metanephrops australiensis) and smaller quantities of velvet and Boschma’s scampi (M. velutinus and M. boschmai)
Mixed snappers have historically been an important component of the catch.</td><td>Demersal trawl.</td><td>Typically at depths of 350 to 600 m (Patterson et al., 2017), however stakeholder consultation has indicated that this may be to depths of 800 m.</td></tr>
</table>
</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	The NWSTF commenced in 1985 and the number of active vessels peaked at 21 in the 1986-1987 season and declined through the 1990s before increasing to 10 vessels in 2000-2001 and 2002-2002 seasons. Four vessels operated in the 2017-2018 and 2018-2019 seasons (Patterson *et. al*. 2020). Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope (Patterson *et al*., 2017).		
				Active licences/vessels:	Four vessels (Patterson *et. al*., 2020).		
State Managed Fisheries							
Pilbara Fish Trawl (Interim) Managed Fishery		✓		**Management area**	The Pilbara Trawl (Interim) Managed Fishery is of high intensity and is 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*., 2020a). No fish trawl units have been allocated for use in Area 6 of Zone 2 since the management plan commenced operation in 1998.		
				Species targeted		**Fishing methods**	**Fishing depth**
				The Pilbara Fish Trawl (Interim) Managed Fishery (PFTIMF) targets more than 50 scalefish species. The five main demersal scalefish species landed by the fisheries in the Pilbara region are blue-spotted emperor, crimson snapper, rosy threadfin bream, red emperor and goldband snapper in 2018 (Newman *et al*., 2020a).	Demersal trawl.	The Pilbara Fish Trawl Fishery lands the largest component of the catch and operates in waters between 50 and 200 m water depth (Allen *et al*., 2014, Newman et al. 2015). Stakeholders have advised that trawling can occur in depths of up to approximately 800 m.
				Fishing effort:	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years:		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Pilbara Trawl (Interim) Managed Fishery caught 1996 t in 2018-19, 1780 t in 2017-18, 1529 t in 2016-17, 1172 t in 2015-16, 1105 t in 2014-15.		
				Active licences/vessels:	Two Pilbara Trawl (Interim) Managed Fishery vessels in 2017 (Newman *et al*., 2020a). Active vessels data are confidential as there were fewer than three vessels in the Pilbara Fish Trawl Interim Managed Fishery (Newman *et al*., 2020a).		
Pilbara Trap Managed Fishery		✓	✓	**Management area**	The Pilbara Trap 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**
				Pilbara Trap Managed Fishery catch is made up of around 45-50 different fish species. The four main species landed by the fisheries in the Pilbara region are blue-spotted emperor, red emperor, goldband snapper and Rankin cod.		Demersal fish traps.	Greatest effort in waters less than 50 m depth targeting high value species such as red emperor and goldband snapper.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years: Pilbara Trap Managed Fishery caught 563 t in 2018-19, 573 t in 2017-18, 495 t in 2016-17, 510 t in 2015-16, 268 t in 2014-15. In 2018, the total catch for the Pilbara Trap Managed Fishery was 563 t, making up 21% of the total catch by the Pilbara Demersal Scale Fishery (Newman *et al*., 2019).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels	In the 2019 season, there were six licences in the Pilbara Trap Managed Fishery, (Newman *et al*., 2020a). Active vessels data are confidential as there were fewer than three vessels in the Pilbara Trap Managed Fishery (Newman *et al*., 2019).		
Pilbara Line Managed Fishery		✓	✓	**Management area**	The Pilbara Line Managed Fishery boat licences are permitted to operate anywhere within "Pilbara waters", bounded by a line commencing at the intersection of 21°56'S latitude and the high water mark on the western side of the North-west Cape on the mainland of WA; west along the parallel to the intersection of 21°56'S latitude and the boundary of the AFZ and north to longitude 120°E.		
				Species targeted		**Fishing method**	**Fishing depths**
				The Pilbara Line Managed Fishery catch is made up around 45-50 different fish species. The Pilbara Line Managed 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 The Pilbara Line Managed Fishery operates on an exemption basis that enables licence holders to fish for any nominated five-month block during the year.		Demersal long line.	Pilbara Line Fishing Depth: Operates up to a depth of 600 m.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years: Pilbara Line Managed Fishery caught 93 t in 2018-19, 143 t in 2017-18, 126 t in 2016-17, 97 t in 2015-16, 40 t in 2014-15. The total catch in 2018 for the Pilbara Line Managed Fishery was 93 t, making up 3% of the total catch by the Pilbara Demersal Scalefish Fishery (Newman *et al*., 2019).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels	In the 2018 season there are nine individual licences in the Pilbara Line Fishery, held by seven operators. Active vessels data is confidential as there were fewer than three vessels in the Pilbara Line Fishery (Newman *et al*., 2018).		
Mackerel Managed Fishery	✓	✓	✓	**Management area**	The commercial fishery extends from Geraldton to the Northern Territory border. There are three managed fishing areas: Kimberley (Area 1), Pilbara (Area 2), and Gascoyne and West Coast (Area 3).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Spanish mackerel (*Scomberomorus commerson*) Grey mackerel (*S. semifasciatus*) Other species from the genus *Scomberomorus*		Near-surface trawling gear. Jig fishing.	Previous engagement with WAFIC suggests that the depth of fisheries may extend to 70 m.
				Fishing effort:	Most of the catch is taken from waters off the Kimberley coasts (Lewis and Brand-Gardner, 2018), 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). Based on State of the Fisheries annual reports provided by DPIRD, catch trends are as follows: 213 t in 2018-19 (the lowest on record (Lewis *et al*., 2020), 283 t in 2017-18, 276 t in 2016-17, 302 t in 2015-16, 322 t in 2014-15.		
				Active licences/vessels:	Fifteen boats fished in 2018, with approximately 35-40 people directly employed in the Mackerel Managed Fishery, primarily from May-November (Lewis *et al*., 2020).		
Marine Aquarium Managed Fishery	✓	✓	✓	**Management area**	The Marine Aquarium Managed Fishery is able to operate in all 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.*, 2020b).		
				Species targeted		**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Finfish, hard coral, soft coral, tridacnid clams, syngnathids (seahorses and pipefish), other invertebrates (including molluscs, crustaceans, echinoderms etc.), algae, seagrasses and 'live rock'.	The fishery is diver-based, which typically restricts effort to safe diving depths (less than 30 m).	Less than 30 m, as advised by WAFIC.
				Fishing effort:	Total catch for the Marine Aquarium Managed Fishery in 2018 was 156,188 fishes, 32.025 t of coral, live rock and living sand and 176.02 L of marine plants and live feed.	
				Active licences/vessels:	Eleven licences were active in 2019 (Newman *et al.*, 2020b).	
Beche-de-mer Fishery	✓	✓	✓	**Management area**	Fishing occurs in the northern half of WA from Exmouth Gulf to the NT border and is managed under Ministerial Exemptions.	
				Species targeted	**Fishing methods**	**Fishing depth**
				The sea cucumber fishery targets two main species: sandfish (*Holothuria scabra*) and redfish (*Actinopyga echinites*).	Diving	The targeted species typically inhabit nearshore in shallow depths.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPRID, catch trends are as follows: 62t in 2018 (Gaughan and Santoro, 2020), 135t in 2017, 93t in 2016, 38t in 2015	
				Active licences/vessels	Six active licences in 2019 (Hart *et al*., 2019). Active vessels data is confidential as there were fewer than three vessels.	
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**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				The fishery targets: Western king prawns (*Penaeus esculentus*) Brown tiger prawns (*Penaeus esculentus*) Blue endeavour prawns (*Metapenaeus endeavouri*	Low opening, otter prawn trawl systems.	Prawn trawling takes place in water depths of approximately 30 metres and less (licence holder feedback). 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 2018 were less than 60 t below the target catch range (Kangas *et al.*, 2020a).	
				Active licences/vessels:	One vessel (Kangas *et al.*, 2020a).	
Pearl Oyster Managed Fishery	✓	✓	✓	**Management area**	Located in shallow coastal waters with the pearl oyster managed fishery designated by four zones extending from Exmouth to Kununurra and the seaward boundary demarcated by the 200 nm EEZ.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Pearl oysters (*Pinctada maxima*).	Drift diving.	Fishing effort is mostly focussed in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs *et al.* 2002).
				Fishing effort:	In 2018, catch was taken from Zones 2 and 3 with no fishing in Zone 1. The number of pearl oysters caught for 2018-19 was 614,002. Total effort was 15,637 dive hours, this was an increase from 2017 effort of 12,845 hours. No fishing occurred in Zone 1 in 2017 and 2018 (Gaughan and Santoro, 2020).	
				Active licences/vessels:	15,637 diver hours (Hart *et al.*, 2020a).	
		✓	✓	**Management area**	The Pilbara Crab Managed Fishery comprises WA waters off the north-western coast of WA north of 23° 34′ south latitude and west of 120° 00′ east longitude. Areas of the fishery north and east of Exmouth and	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Pilbara Crab Managed Fishery					nearshore are currently closed as per Schedule 2 of the Draft Management Plan for the Pilbara Crab Managed Fishery.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Crabs of the Family Portunidae, excluding crabs of the genus *Scylla*.		Traps.	Up to 50 m deep.
				Fishing effort:	The capacity of the fishery is 600 traps.		
				Active licences/vessels:	No information available at this time.		
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 however, species generally found in shallow waters (up to 30 m).
				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 2018 commercial catch was 191 t, with 72% taken by the South West Coast Salmon Managed Fishery, 25% by the South Coast Salmon Managed Fishery and 3% by other fisheries (Duffy and Blay, 2020a).		
				Active licences/vessels:	Six licences.		
	✓	✓	✓	**Management area**	The Specimen Shell Managed Fishery (SSMF) encompasses the entire WA coastline, but effort is concentrated in areas adjacent to the population centres such as Broome, Exmouth, Shark Bay,		

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td>Specimen Shell Managed Fishery</td><td></td><td></td><td></td><td colspan="4">
<table>
<tr><td></td><td colspan="3">Geraldton, Perth, Mandurah, the Capes area and Albany (Hart et al., 2020b). There are a number of closed areas where the SSMF is not permitted to operate. These include various marine parks and aquatic reserves, such as Ningaloo Marine Park.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The Specimen Shell Managed Fishery targets the collection of specimen shells for display, collection, cataloguing and sale.</td><td>Collection is predominantly by hand when diving to wading in shallow, coastal waters, though in deeper water collection may be conducted by remotely operated vehicles (limited to one per licence).</td><td>For collection by hand, (diver-based) this typically restricts effort to safe diving depths (less than 30 m).
ROV collection could enable depths up to 300 m (Hart et al., 2017). In the past there has been one licence holder in the Specimen Shell Managed Fishery who has trialled ROV means of shell collection, WAFIC have provided advice that this fishery is no longer active.</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Information not available.</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="3">In 2018 there were 31 licences with only two divers allowed in the water per licences at one time (Hart et al., 2018). The number of people employed regularly in the fishery is likely to be about 21 (Hart et al., 2018).</td></tr>
</table>
</td></tr>
<tr><td>West Australian Abalone Fishery</td><td>✓</td><td>✓</td><td>✓</td><td colspan="4">
<table>
<tr><td>Management area</td><td colspan="3">The Western Australian Abalone 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.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Greenlip abalone (Haliotis laevigata)
Brownlip abalone (Haliotis conicopora)
Roe’s abalone (Haliotis roei)</td><td>Divers.</td><td>Distribution to 5 m depth for Roe’s abalone and 40 m depth for greenlip / brownlip abalone (DOF, 2011).</td></tr>
</table>
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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">In 2018, the total commercial catch was 48 t, 1 t less than the catch in each of the last two seasons. No commercial fishing for abalone north of Moore River (Zone 8 of the managed fishery) has occurred since 2011–2012 (Strain et al., 2018).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">26 vessels active in Roe’s abalone fishery (WAFIC[5]).</td></tr>
<tr><td rowspan="5">West Coast Deep Sea Crustacean Managed Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The West Coast Deep Sea Crustacean Managed Fishery extends north from Cape Leeuwin to the WA/NT border in water depths greater than 150 m within the AFZ.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The fishery targets deepwater crustaceans. Catches were dominated by crystal crabs of which 99% of their Total Allowable Catch (TAC) was landed (How and Orme, 2020a).
Crystal (snow) crab (Chaceon albus)
Giant (king) crab (Pseudocarcinus gigas)
Champagne (spiny) crabs (Hypothalassia acerba)</td><td>Baited pots, or traps, are operated in long-lines which have between 80 and 180 pots attached to a main line marked by a float at each end.</td><td>Deeper than 150 m (and mostly at depths of between 500 m – 800 m). Most of the commercial Crystal crab catch is taken in depths of 500 m – 800 m (WAFIC[6]).</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">The total landings in 2018 was 168. t. Two vessels operated in the fishery in 2017, using baited pots operated in a longline formation in the shelf edge waters, mostly in depths between 500 and 800 m (How and Orme, 2020a). Fishing effort was concentrated between Fremantle and Carnarvon.</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="3">There were four active vessels in 2018 (How and Orme, 2020a).</td></tr>
</table>

[5] https://www.wafic.org.au/fishery/roes-abalone-fishery/

[6] https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Abrolhos Islands and Mid-West Trawl Fishery			✓	**Management area**	The Abrolhos Islands and Mid-West Trawl Fishery (AIMWTMF) operates around the Abrolhos Islands within the SWMR.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Saucer scallops (*Ylistrum balloti,* formerly *Amusium balloti*)		Trawl.	Information not available, however, the species occurs at depth of around 30-60 m and therefore fishing effort would likely be at these depths (Himmelman *et al*., 2009).
				Fishing effort:	The scallop landings in the AIMWTMF were 31.0 t meat weight (154.8 t whole weight). Between 2011 and 2015, the annual pre-season surveys showed very low recruitment (1-year old), as a result of the 2011 extreme marine heatwave and subsequent poor pawning stock (Kangas *et al.*, 2020b). The fishery was closed between 2011 and 2016.		
				Active licences/vessels:	Information about licences or vessels is not available but the Department of Primary Industry and Regional Development reported 774 t of catch from this fishery in the 2019 annual report (DPIRD, 2019).		
Broome Prawn Managed Fishery	✓			**Management area**	The Broome Prawn Managed Fishery (BPMF) operates off Broome and forms part of the North Coast Prawn Fishery.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Coral prawn		Trawl.	Trawling is generally in waters between 30 and 60 m deep, however can occur down to 100 m (DOEH, 2004).
				Fishing effort:	BPMF recorded extremely low fishing effort in 2018. Only two vessels undertook trial fishing to investigate whether the catch rates were sufficient for commercial fishing. This resulted in negligible landings of Western king prawn (Kangas *et al*., 2020a).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	Two vessels conducting fishing trial operated in 2018 (Kangas *et al*., 2020a).		
Exmouth Gulf Prawn Managed Fishery			✓	**Management area**	The estimated employment in the fishery in 2017 was 18 people including skippers and other crew (Kangas *et al*., 2018). The fishery occupies a total area of 4000 km², with only half of this area being trawled (Fletcher and Santoro, 2015).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*) Blue endeavour prawn (*Metapenaeus endeavouri*) Banana prawn (*Penaeus merguinensis*)		Trawl.	Information not available.
				Fishing effort:	The total landings of prawns in 2018 were 880 t (Kangas *et al*., 2020a). In the 2016 season, a fishing effort of about 23,000 hours resulted in a catch of 822 t.		
				Active licences/vessels:	The precise number of vessels is unreported. Eighteen people were said to be employed in this fishery in 2018 (Kangas *et al.*, 2019); however, in 2013 it was reported that 18 skippers as well as other crew and support staff were employed (WAFIC[7]).		
Gascoyne Demersal Scalefish Managed Fishery			✓	**Management area**	The Gascoyne Demersal Scalefish Fishery (GDSF) is located between the southern Ningaloo Coast to south of Shark Bay (23°07.30'S to 26°.30'S) with a closure area at Point Maud to Tantabiddi (21°56.30'S) (WAFIC[8]).		
				Species targeted		**Fishing methods**	**Fishing depth**

[7] https://www.wafic.org.au/fishery/exmouth-gulf-prawn-fishery/

[8] https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Pink snapper (*Chrysophrys auratus*) Goldband snapper (*Pristipomoides multidens*) Red emperor (*Lutjanus sebae*) Cods (*Gadus morhua*) Emperors (*Lethrinus miniatus)*	Mechanised handlines.	Information not available.
				Fishing effort:	The GDSF reported a total commercial catch of 210 t in 2017-18.	
				Active licences/vessels:	In 2018, 13 vessels fished during the season, in the 2017 season there were 16 vessels (Gaughan and Santoro, 2018).	
Kimberley Developing Mud Crab Fishery	✓			**Management area**	The Kimberley Developing Mud Crab 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).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Brown mud crab (*Scylla olivacea*) Green mud crab (*Scylla serrata*)	Trap.	Information not available.
				Fishing effort:	The catch landed represents all commercially caught mud crabs landed in WA for 2018. A nominal catch rate of 0.66 kg/traplift was recorded for 2018, which is a 28% decrease from 2017 but remains above the harvest strategy threshold (Johnston *et al*., 2020).	
				Active licences/vessels:	There are currently three licences issued to commercial operators (600 trap limit), and three exemptions issued to Indigenous groups (total of 210 traps currently allocated of a maximum 600 traps) (Johnston *et al*., 2020).	
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.	
				Species targeted	**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Banana prawn (*Penaeus merguiensis*) Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*) Blue endeavour prawn (*Metapenaeus endeavouri*)	Trawl.	Information not available.
				Fishing effort:	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). The total landings for the 2018 season were 81 t. Fishing effort was less than half at 138 days, compared to 281 boat days in 2017 (Kangas *et al*., 2020a).	
				Active licences/vessels:	The precise number of vessels is unreported, though low effort produced a catch of 17 t in 2016 (Kangas *et al.*, 2018).	
Northern Demersal Scalefish Managed Fishery	✓			**Management area**	The fishery is divided into two fishing areas: an inshore sector (Area 1) and an offshore sector (Area 2) (Newman *et al.*, 2018). Area 1 permits line fishing only, between the high water mark and the 30 m isobath. Area 2 permits handline, dropline and fish trap fishing methods and is further divided into zones. Zone A is an inshore area, Zone B comprises the area with most historical fishing activity, and Zone C is an offshore deep slope area representing waters deeper than 200 m (Fletcher *et al.*, 2017).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Goldband snapper (*Pristipomoides multidens*) Blue-spotted emperor (*Lethrinus punctulantus*) Red emperor (*Lutjanus sebae*) Rankin cod (*Epinephelus multinotatus*)	Line fishing, handline, dropline and fish trap fishing.	Information not available.

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	In 2018, the fishery reported a total catch of 1297 t. Most of the catch is landed from Zone B, with a catch of 1106 t in 2018. The level of catch in Zone B is the highest reported since zoning was implemented in 2006 (Newman *et al.*, 2019).		
				Active licences/vessels:	Six vessels fished in the 2018 season and at least 20 people were directly employed (Gaughan and Santoro, 2018).		
Octopus Interim Management Fishery				**Management area**	The developing Octopus Fishery operates from Kalbarri Cliffs in the north to Esperance in the south.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Octopus sp. cf. tetricus		Passive shelter pots and active traps.	In inshore waters to a depth of 70 m (DPIRD, 2018).
				Fishing effort:	In 2019, the total commercial octopus catch was 314 t, which was 22% higher than the 2017 catch of 257 t. In 2016, about 200 vessels reported a total catch of 252 t (Hart *et al.*, 2020c).		
				Active licences/vessels:	About 21 vessels fish within the octopus specific fisheries, and about 200 vessels from the West Coast Rock Lobster Fishery catch octopus as bycatch (Gaughan and Santoro, 2018).		
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* and goldenline *S. analis*) Sea mullet *(Mugil cephalus*) Tailor (*Pomatomus saltatrix*) Western yellowfin bream (*Acanthopagrus australis*)		Beach seine and mesh net.	Information not available.

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	In 2018, the total catch was 176 t (Gaughan and Santoro, 2020). The fishery currently employs about 14 fishers based on the seven fishery licences in operation (WAFIC[9]).		
				Active licences/vessels:	Six vessels operated employing around 12 fishers (Gaughan and Santoro, 2018).		
Shark Bay Crab Managed Fishery				**Management area**	The Shark Bay Crab Managed Fishery operates within the NWMR.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Blue swimmer crab (*Portunus armatus*)		Trap and trawl.	Information not available.
				Fishing effort:	Commercial fishing for blue swimmer crabs in Shark Bay was voluntarily halted by industry in 2012 to facilitate stock rebuilding. The stock is still in a recovery phase; however, the fishery has resumed and reported a total commercial catch of 518 t in the 2017/18 season. The average commercial trap catch rate was 1.5 kg/traplift during 2017/18 (Chandrapavan *et al.*, 2017).		
				Active licences/vessels:	The precise number of vessels in the Shark Bay Blue Swimmer Crab Fishery is unreported. There are five crab trap permits. These permits are consolidated onto three active vessels (WAFIC[10]).		
Shark Bay Prawn and Scallop Managed Fishery				**Management area**	The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*)		Low-opening otter trawls.	Information not available.

[9] https://www.wafic.org.au/fishery/inner-shark-bay-scalefish-fishery/

[10] https://www.wafic.org.au/fishery/shark-bay-prawn-and-scallop-managed-fisheries/

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Endeavour prawns (*Metapenaeus endeavouri*) Coral prawns (*Metapenaeopsis sp*.) Saucer scallop (*Amusium balloti*)		
				Fishing effort:	The Shark Bay Scallop Managed Fishery is currently in a recovery phase due to the results from the pre-season survey of stock abundance (Fletcher and Santoro, 2015; Kangas *et al.*, 2018).	
				Active licences/vessels:	The precise number of vessels in the Shark Bay Prawn Managed Fishery is unreported; however, about 100 people are employed in this fishery (Gaughan and Santoro, 2018). About 20 skippers and crew are employed in scallop fishing in the Shark Bay and South Coast fisheries across 18 vessels in 2015 (Sporer *et al.*, 2015).	
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:	The South Coast Crustacean Managed Fishery reported a total catch of 101.2 t in 2018 season and the value of the fishery for 2017/2018 was about $5.9 million (Howe and Orme, 2020b).	
				Active licences/vessels:	The number of vessels is unknown; however, a total of 1977 pots are licensed to be used.	
	-	-	-	**Management area**	The fishery is active in coastal waters between Cape Leeuwin and the South Australia border. Landings are primarily at Albany, Bremer Bay and Esperance (Norriss and Blazeski, 2020).	

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td>South Coast Purse Seine Managed Fishery</td><td></td><td></td><td></td><td>
<table>
<tr><th>Species targeted</th><th>Fishing methods</th><th>Fishing depth</th></tr>
<tr><td>Small pelagic finfish such as pilchards and yellowtail scad using purse seine nets from vessels.
Sandy sprat (Hyperlophus vittatus)
Blue sprat (Spratelloides robustus)</td><td>Purse seine.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">In the 2017/18 season the total catch effort was 2,168 t (Norriss and Blazeski, 2020).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">Nine active vessels in 2017/18 (Norriss and Blazeski, 2020).</td></tr>
</table>
</td></tr>
<tr><td>South-west Trawl Managed Fishery</td><td>-</td><td>-</td><td>-</td><td>
<table>
<tr><td>Management area</td><td colspan="2">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).</td></tr>
<tr><th>Species targeted</th><th>Fishing methods</th><th>Fishing depth</th></tr>
<tr><td>Scallops (Ylistrum balloti, formerly Amusium balloti) and associated by-products
Western king prawn (Penaeus latisulcatus)
In years of low scallop catches licencees may use other trawl gear to target fin-fish species.</td><td>Trawl.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">Effort in the fishery is highly variable and typically fluctuates in response to recruitment variability in saucer scallops and prawns. The fishery was not active in 2015 or 2016 (Fairclough and Walters, 2018).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">Only one boat fished in 2018 for a total of 5 boat days for minimal catch (Fairclough and Walters, 2018).</td></tr>
</table>
</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
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:	The total catch for 2018 was 243 t (Duffy and Blay, 2020b).		
				Active licences/vessels:	Number of vessels is unknown; however, 12 commercial fishers were employed in 2018 (Duffy and Blay, 2020b).		
West Coast Beach Bait Managed Fishery	-	-	-	**Management area**	Primarily active in the Bunbury areas in the SWMR.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Whitebait		Beach-based haul nets.	Information not available.
				Fishing effort:	In recent years the fishery is primarily active in the Bunbury area. Total catch of whitebait in 2015 was 40.2 t (Duffy and Blay, 2020c).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	Number of vessels is unknown; however, only one license was issued (DPIRD, 2019).		
West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery	-	-	-	**Management area**	The West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WCDGDLF) is part of the Temperate Demersal Gillnet and Demersal Longline Fishery (TDGDLF), which operates between 26° and 33° S, and the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (JASDGDLF), which operates from 33° S to the WA/SA border (Braccini and Blay, 2020).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Gummy shark (*Mustelus antarcticus*) Dusky shark (*Carcharhinus obscurus*) Whiskery shark (*Furgaleus macki*) Sandbar shark (*C. plumbeus*)		Gillnet and longline.	Information not available.
				Fishing effort:	Catch estimated annual value of the fishery was $0.2 million for 2017 to 2018 (Braccini and Blay, 2020).		
				Active licences/vessels:	Vessel numbers are unknown; however, 17 interim managed fishery permits were held in 2019 (DPIRD, 2019) and between 18 and 21 skippers and crew were employed between 2016 and 2017.		
West Coast Demersal Scalefish Fishery	-	-	-	**Management area**	These fisheries include the West Coast Demersal Scalefish (Interim) Managed Fishery (51 boats), the West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery and the temperate Demersal Gillnet and Demersal Longline Fisheries. The West Coast Demersal Scalefish 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**
				Baldchin groper (*Choerodon rubescens*) Dhufish (*Glaucosoma hebraicum*) Pink snapper *(Pagrus auratus*)		Lines.	Inshore species – 20 to 250 m water depth.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
						Offshore species – more than 250 m water depth.
				Fishing effort:	In 2016, the West Coast Demersal Scalefish (interim) Managed Fishery reported a total catch of 256 t.	
				Active licences/vessels:	The precise number of vessels in the West Coast Demersal Scalefish Fisheries is unreported; however, it is restricted to 60 interim managed fishery permit holders.	
West Coast Purse Seine Managed Fishery	-	-	-	**Management area**	Located in waters from Cape Bouvard extending to Lancelin.	
				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:	Information not available	
				Active licences/vessels:	Seven vessels in 2017 (Gaughan and Santoro, 2018).	
West Coast Rock Lobster Managed Fishery			✓	**Management area**	The West Coast Rock Lobster Fishery operates from Shark Bay south to Cape Leeuwin. The fishery is managed using zones, seasons and total allowable catch. The recreational fishery targets the western rock lobsters using baited pots and by diving between North-west Cape and Augusta.	

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4"></td><td>Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td>Western rock lobster (Panulirus cygnus)</td><td>Baited pots.</td><td>Less than 20 m.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">In 2018, 234 vessels reported a total catch of 6400 t in 2017 (de Lestang et al., 2018). In 2016, 226 vessels reported a total catch of 6,086 t (Gaughan and Santoro, 2018).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">234 vessels operated in 2017 and 233 vessels operated in 2018 (Gaughan and Santoro, 2018).</td></tr>
</table>

11.5.2 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.

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.

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.

North Coast Bioregion

Aquaculture activities in the North Coast bioregion is dominated by the production of pearls. 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 (Gaughan and Santoro, 2018). 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).

Other aquaculture developments in the North Coast include emerging producers of coral and live rock species for aquariums as well as barramundi (*Lates calcarifer)* farms and microalgae culturing for Omega-3, biofuels and protein biomass (Gaughan and Santoro, 2020).

11.6 Fisheries – Traditional

Traditional or customary fisheries are typically restricted to shallow coastal waters and/or areas with structures such as reef.

Dugong, fish and marine turtles that move between coastal and Commonwealth waters are important components of the Aboriginal people's culture and diet. Aboriginal 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 11-1)**, 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.

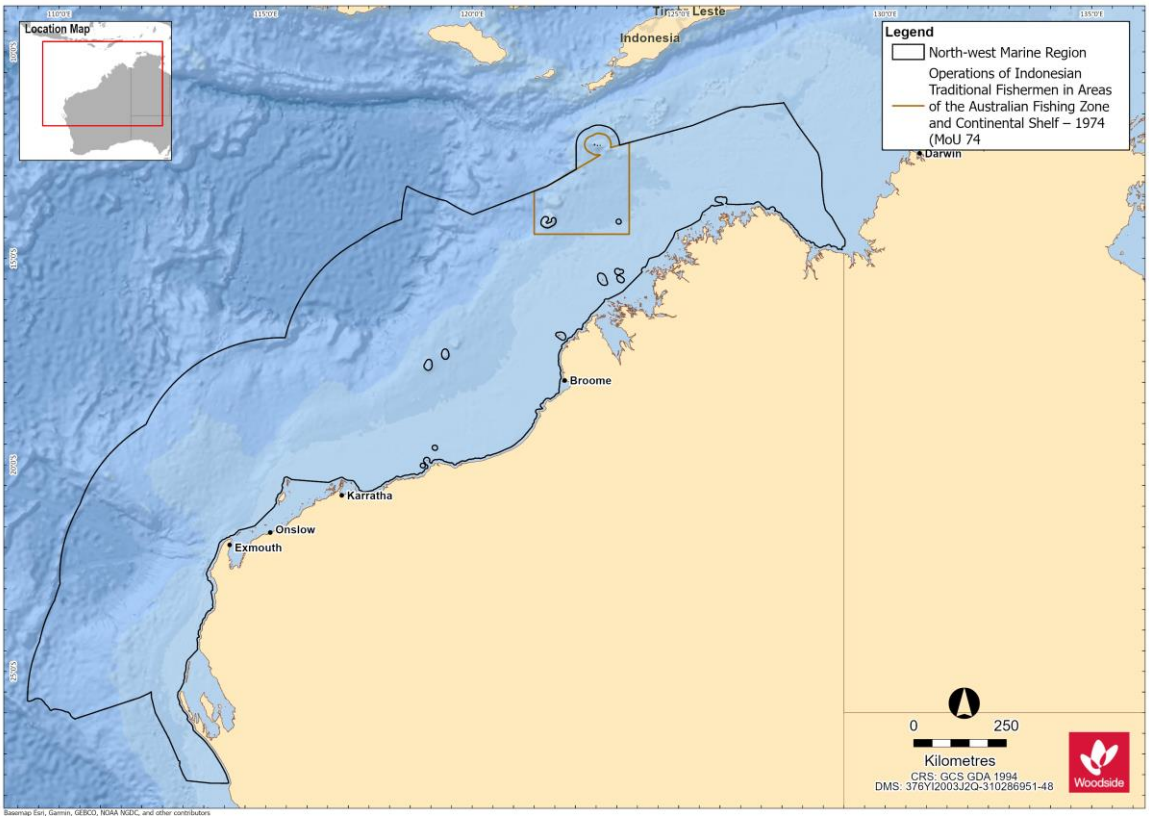

Figure 11-1 MOU 74 Box. Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974

11.7 Tourism and Recreation

There are growing tourism and recreational sectors in WA. 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, other recreational fishing, diving, snorkelling, marine fauna watching, and yachting.

11.7.1 Gascoyne Region

Outside the petroleum industry, tourism is the largest revenue earner of all the major industries of the Gascoyne region. It contributes significantly to the local economy in terms of both income and

employment. In 2018 there was an average of 337,400 visitors with a visitor spend of $359 million (Gascoyne Development Commission[11]).

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). The main marine nature-based tourist activities are concentrated around and within the Ningaloo WHA.

11.7.2 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, generating $413 million in gross revenue annually (Pilbara Development Commission[12]).

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 (Williamson *et al.*, 2006). Once at sea, charter vessels may also frequent the waters surrounding the Montebello Islands.

11.7.3 Kimberley Region

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.

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.

11.8 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 10,064 vessel movements in Port of Dampier 2019/20 annual reporting period (PPA, 2020). 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).

[11] https://www.gdc.wa.gov.au/industry-profiles/tourism/

[12] https://www.pdc.wa.gov.au/our-focus/strategicinitiatives/tourism

11.9 Oil and Gas Infrastructure

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. 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.

11.10 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.
- 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.

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APPENDIX A. PROTECTED MATTER SEARCH REPORTS FOR NWMR, SWMR AND NMR

Australian Government

Department of Agriculture, Water and the Environment

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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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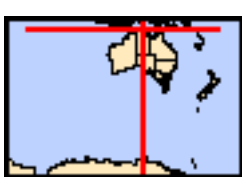
This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates

Buffer: 1.0Km



Summary

Matters of National Environmental 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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	33
Listed Migratory Species:	70

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 http://www.environment.gov.au/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 Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	127
Whales and Other Cetaceans:	25
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	15

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	1
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	8

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 the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name
EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions [Resource Information]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name
North

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Calidris canutus Red Knot, Knot [855]	Endangered	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]	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
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat may occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-	Vulnerable	Species or species

Name	Status	Type of Presence
tailed Godwit [86380]		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
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
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
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Notomys aquilo Northern Hopping-mouse, Woorrentinta [123]	Endangered	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 may occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Reptiles		
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
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
Sharks		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
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 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
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
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
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known 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
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

Name	Threatened	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
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
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
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat likely to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	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

Name	Threatened	Type of Presence
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
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		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 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		
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]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
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
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	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
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	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
Limicola falcinellus Broad-billed Sandpiper [842]		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]		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
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
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
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
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	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

Name	Threatened	Type of Presence
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		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
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		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]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
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
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]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Sterna bengalensis Lesser Crested Tern [815]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Species or species habitat known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area
Fish		

Name	Threatened	Type of Presence
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
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
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

Name	Threatened	Type of Presence
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
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
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

Name	Threatened	Type of Presence
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
Mammals		
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		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

Name	Threatened	Type of Presence
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area
Hydrophis caerulescens Dwarf Seasnake [1103]		Species or species habitat may occur within area
Hydrophis coggeri Slender-necked Seasnake [25925]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Seasnake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis gracilis Slender Seasnake [1106]		Species or species habitat may occur within area
Hydrophis inornatus Plain Seasnake [1107]		Species or species habitat may occur within area
Hydrophis mcdowelli null [25926]		Species or species habitat may occur within area
Hydrophis melanosoma Black-banded Robust Seasnake [1109]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Large-headed Seasnake, Pacific Seasnake [1112]		Species or species habitat may occur within area
Hydrophis vorisi a seasnake [25927]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Lapemis hardwickii Spine-bellied Seasnake [1113]		Species or species habitat may occur within area
Laticauda colubrina a 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
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
Parahydrophis mertoni Northern Mangrove Seasnake [1090]		Species or species habitat may occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
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 Dophin, 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 simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area

Name	Status	Type of Presence
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		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 chinensis Indo-Pacific Humpback Dolphin [50]		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 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]
Name	Label
Arafura	Multiple Use Zone (IUCN VI)
Arafura	Special Purpose Zone (Trawl) (IUCN VI)
Arnhem	Special Purpose Zone (IUCN VI)
Gulf of Carpentaria	National Park Zone (IUCN II)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)

Name	Label
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
Limmen	Habitat Protection Zone (IUCN IV)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)
Wessel	Habitat Protection Zone (IUCN IV)
Wessel	Special Purpose Zone (Trawl) (IUCN VI)
West Cape York	Habitat Protection Zone (IUCN IV)
West Cape York	National Park Zone (IUCN II)
West Cape York	Special Purpose Zone (IUCN VI)

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Anindilyakwa	NT
Marthakal	NT

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Plants		
Andropogon gayanus Gamba Grass [66895]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Southern Gulf Aggregation	QLD

Key Ecological Features (Marine) [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 Van	North
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North
Pinnacles of the Bonaparte Basin	North
Plateaux and saddle north-west of the Wellesley	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

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-14.758882 129.178077,-13.960657 128.826514,-13.768665 128.606788,-12.484784 128.496924,-11.183724 127.563087,-10.460737 128.233253,-9.746889 129.518653,-9.660256 130.254737,-9.779371 130.935889,-9.280976 132.528907,-8.901286 133.385841,-9.411062 134.858008,-9.129149 135.473243,-10.363488 138.582374,-11.129831 139.395362,-10.190527 141.339942,-10.806262 141.317969,-10.817053 141.922217,-11.10827 142.087012,-12.527687 141.559669,-13.330764 141.515723,-13.960657 141.40586,-15.045535 141.570655,-15.945419 141.317969,-17.22994 140.823585,-17.513041 140.53794,-17.659661 140.032569,-17.429205 139.593116,-16.630864 139.966651,-16.409675 139.812842,-16.177683 139.208594,-16.820251 138.966895,-15.924291 137.165137,-15.575354 137.132178,-15.458909 136.934424,-15.289418 136.11045,-14.822615 135.45127,-14.269641 135.846778,-14.418655 136.97837,-13.608551 137.011329,-12.784952 136.780616,-12.388227 137.055274,-10.957305 136.76963,-10.957305 136.703712,-11.399198 136.407081,-11.679068 135.824805,-11.904912 135.616065,-11.947909 134.473487,-11.679068 133.869239,-11.700585 133.50669,-11.431505 133.528663,-11.442273 133.363868,-11.64679 133.254005,-11.313028 132.979346,-11.04358 133.067237,-10.90337 132.583839,-11.151389 131.221534,-11.3238 130.782081,-11.054363 130.287696,-11.474575 130.111915,-11.765126 129.958106,-11.947909 130.067969,-11.894162 130.760108,-12.119827 130.913917,-12.441874 130.474464,-12.870649 130.100928,-13.939333 129.584571,-13.971319 129.419776,-14.47185 129.28794,-14.631358 129.507667,-14.843856 129.452735,-14.769505 129.178077,-14.758882 129.178077

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-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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Australian Government

Department of Agriculture, Water and the Environment

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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

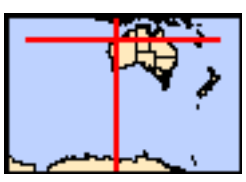
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 10/05/21 13:07:00

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates

Buffer: 1.0Km



Summary

Matters of National Environmental 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:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	70
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 http://www.environment.gov.au/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 Land:	None
Commonwealth Heritage Places:	1
Listed Marine Species:	149
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	17

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	10
Regional Forest Agreements:	None
Invasive Species:	23
Nationally Important Wetlands:	3
Key Ecological Features (Marine)	5

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Status
Shark Bay, Western Australia	WA	Declared property
The Ningaloo Coast	WA	Declared property

National Heritage Properties [Resource Information]

Name	State	Status
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place
The West Kimberley	WA	Listed place
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Historic		
Dirk Hartog Landing Site 1616 - Cape Inscription Area	WA	Listed place

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Eighty-mile beach	Within Ramsar site
Ord river floodplain	Within 10km of Ramsar

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 the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name
EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions [Resource Information]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name
North-west

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.

Name	Status	Type of Presence
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat known to occur within area
Calidris tenuirostris Great Knot [862]	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
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]	Vulnerable	Species or species habitat likely to 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
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically 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
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may 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

Name	Status	Type of Presence
		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	Foraging, feeding or related behaviour 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	Foraging, feeding or related behaviour likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
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 lesueur Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	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 may occur within area
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

Name	Status	Type of Presence
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Lagostrophus fasciatus fasciatus Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Translocated population known to occur within area
Leporillus conditor Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Translocated population known to occur within area
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 likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Perameles bougainville bougainville Western Barred Bandicoot (Shark Bay) [66631]	Endangered	Translocated population known to 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
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	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
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding 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
Lerista nevinae Nevin's Slider [85296]	Endangered	Species or species habitat known to occur within area
Liasis olivaceus barroni Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to 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	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

Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species

Name	Threatened	Type of Presence
		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]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely 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]		Foraging, feeding or related behaviour 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
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	Foraging, feeding or related behaviour 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	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
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
Dugong dugon Dugong [28]		Breeding 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
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	Foraging, feeding or related behaviour known to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur

Name	Threatened	Type of Presence
		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	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 chinensis Indo-Pacific Humpback Dolphin [50]		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 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

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]	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	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 ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	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
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
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		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
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Natural		
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
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
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres		
Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba		
Sanderling [875]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	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 ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		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 ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely 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]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour 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]		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
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
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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat 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]		Foraging, feeding or related behaviour likely to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or

Name	Threatened	Type of Presence
		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
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Breeding known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna bengalensis Lesser Crested Tern [815]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		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	Foraging, feeding or related behaviour 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

Name	Threatened	Type of Presence
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		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 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

Name	Threatened	Type of Presence
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
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

Name	Threatened	Type of Presence
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
Micrognathus micronotopterus Tidepool Pipefish [66255]		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
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
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
Mammals		
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
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Seasnake [1121]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		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
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Slender-necked Seasnake [25925]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Hydrophis czeblukovi Fine-spined Seasnake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis inornatus Plain Seasnake [1107]		Species or species habitat may occur within area
Hydrophis mcdowelli null [25926]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Lapemis hardwickii Spine-bellied Seasnake [1113]		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
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
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 Dophin, 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

Name	Status	Type of Presence
		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 simus Dwarf Sperm Whale [58]		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]	Vulnerable	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 brevirostris Irrawaddy Dolphin [45]		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 chinensis Indo-Pacific Humpback Dolphin [50]		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

Name	Status	Type of Presence
		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]

Name	Label
Abrolhos	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Special Purpose Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Dampier	Habitat Protection Zone (IUCN IV)
Dampier	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Multiple Use Zone (IUCN VI)
Gascoyne	National Park Zone (IUCN II)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Ningaloo	Recreational Use Zone (IUCN IV)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Roebuck	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Bardi Jawi	WA
Dambimangari	WA
Dambimangari	WA
Dirk Hartog Island	WA
Faure Island	WA
Little Rocky Island	WA
Tent Island	WA
Unnamed WA36913	WA
Unnamed WA36915	WA
Uunguu	WA

Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat may occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Andropogon gayanus Gamba Grass [66895]		Species or species habitat likely to occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Exmouth Gulf East	WA
Hamelin Pool	WA
Shark Bay East	WA

Key Ecological Features (Marine) [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	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Pinnacles of the Bonaparte Basin	North-west
Wallaby Saddle	North-west

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-11.269933 127.440005,-12.516962 128.274966,-13.416271 128.362857,-13.854015 128.406802,-14.652617 128.879214,-14.833236 128.956119,-14.737633 128.439761,-14.280288 127.769595,-13.864681 127.385074,-13.864681 127.143375,-13.67261 126.934634,-13.875347 126.418277,-13.843348 126.242496,-13.896678 125.967837,-14.077907 125.934878,-14.34416 125.836001,-14.216398 125.649234,-14.461212 125.099918,-14.641988 125.044986,-14.88633 125.143863,-14.971254 124.990054,-15.257624 124.649478,-15.268222 124.231998,-15.416549 124.16608,-15.490673 124.407779,-16.293713 124.286929,-16.072142 123.616763,-16.219884 123.429996,-16.567693 123.408023,-16.778181 123.561832,-16.914874 123.704654,-17.114478 123.397037,-16.546631 123.034488,-16.251529 123.078433,-16.704537 122.540103,-17.135476 122.144595,-17.502564 122.056705,-18.244939 122.078677,-18.432649 121.738101,-18.76585 121.551334,-19.45099 121.100894,-19.999097 119.584781,-19.906155 119.101382,-20.236365 118.727847,-20.308506 118.112613,-20.648142 117.321597,-20.555589 116.948062,-20.360014 117.01398,-20.318809 116.816226,-20.802273 116.26691,-20.822812 116.113101,-21.468342 115.377017,-21.754335 114.629947,-22.344932 114.355289,-22.202601 114.146548,-21.67268 114.245425,-21.886924 113.849918,-22.669716 113.586246,-23.003846 113.751041,-23.458145 113.696109,-24.031352 113.300601,-24.51208 113.311587,-25.893759 114.135562,-26.258875 114.003726,-25.953045 113.926822,-25.398562 113.45441,-25.686027 113.366519,-26.249022 113.641177,-26.229314 113.509341,-25.378711 112.949039,-25.557248 112.839175,-26.485263 113.256656,-27.161748 113.816959,-27.571531 114.036685,-27.552052 113.113834,-27.151972 112.981998,-25.368784 112.278873,-26.022173 110.389224,-25.893759 110.323306,-25.804776 109.872867,-25.537424 109.587222,-25.626608 109.23566,-24.582033 109.389468,-23.306884 109.872867,-22.882439 110.026675,-21.621623 110.169498,-20.945986 110.510074,-20.030065 110.949527,-19.025706 112.092105,-17.816621 112.981998,-17.271909 113.773013,-16.935895 115.442935,-15.681156 116.014224,-14.790751 116.89313,-14.056594 118.266421,-13.266614 118.42023,-13.949995 120.046207,-13.234532 121.825992,-12.838516 122.529117,-12.15205 122.51813,-11.883411 122.726871,-11.786636 123.067447,-11.926411 123.440982,-12.248693 123.583804,-11.63603 125.737125,-11.334573 126.539126,-11.280707 127.440005,-11.269933 127.440005

Acknowledgements

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-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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Australian Government

Department of Agriculture, Water and the Environment

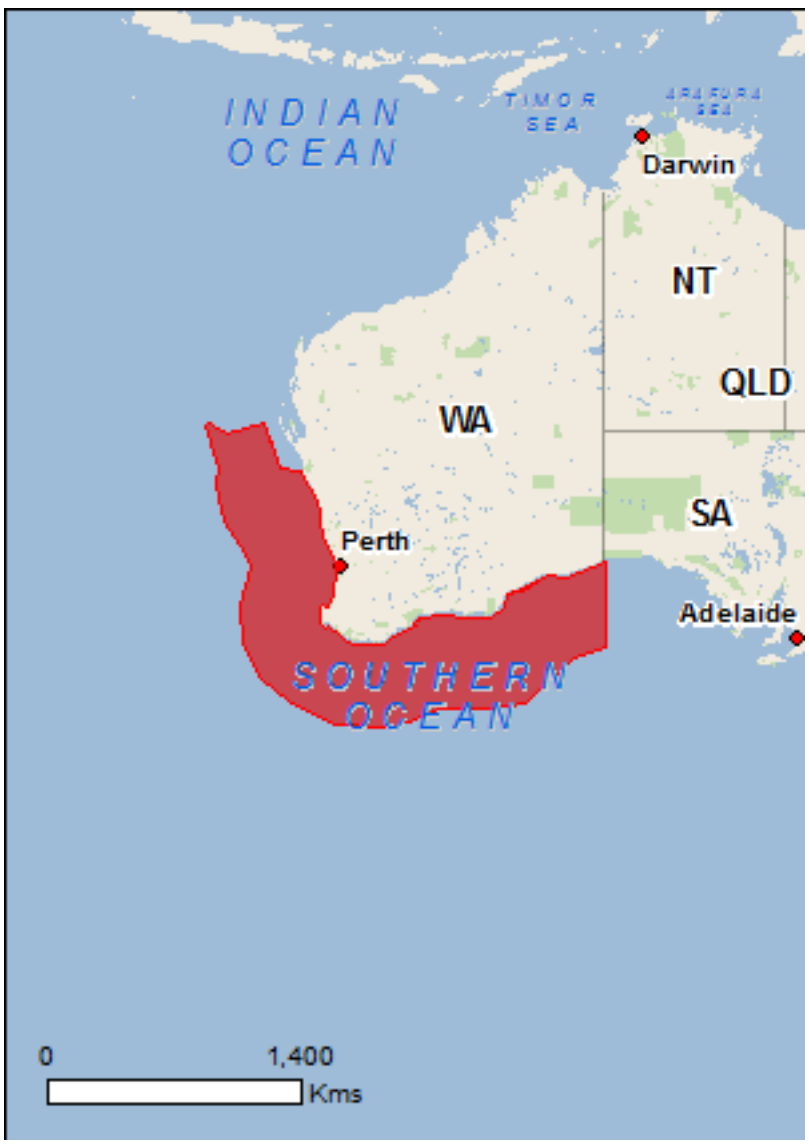
EPBC Act Protected Matters Report

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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

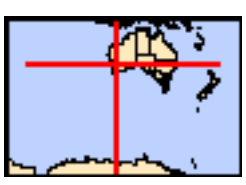
Report created: 10/05/21 12:51:00



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates

Buffer: 1.0Km



Summary

Matters of National Environmental 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:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	65
Listed Migratory Species:	67

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/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 Land:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	106
Whales and Other Cetaceans:	40
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	21

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	10
Regional Forest Agreements:	None
Invasive Species:	42
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	8

Details

Matters of National Environmental Significance

National Heritage Properties [Resource Information]

Name	State	Status
Indigenous		
Cheetup Rock Shelter	WA	Listed place

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Becher point wetlands	Within 10km of Ramsar
Forrestdale and thomsons lakes	Within 10km of Ramsar
Peel-yalgorup system	Within 10km of Ramsar
Vasse-wonnerup system	Within 10km of Ramsar

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 the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name
EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions [Resource Information]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name
South-west

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.

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community may 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]

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely 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 likely to occur within area

Name	Status	Type of Presence
Calidris canutus Red Knot, Knot [855]	Endangered	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]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	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	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	Foraging, feeding or related behaviour likely to 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	Foraging, feeding or related behaviour likely to 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 may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel	Endangered	Species or species

Name	Status	Type of Presence
[1060]		habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely 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 likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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	Foraging, feeding or related behaviour may 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	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Mammals		
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 penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence
		area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to 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
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Translocated population known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
Plants		
Caladenia elegans Elegant Spider-orchid [56775]	Endangered	Species or species habitat may occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat may occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
Drummondita ericoides Morseby Range Drummondita [9193]	Endangered	Species or species habitat likely to occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	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
Reptiles		
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

Name	Status	Type of Presence
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 may occur within area
Liopholis pulchra longicauda		
Jurien Bay Skink, Jurien Bay Rock-skink [83162]	Vulnerable	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
Sharks		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
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]		Breeding known to occur within area
Ardenna grisea		
Sooty Shearwater [82651]		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	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely 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
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
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may 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	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding 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

Name	Threatened	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
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may 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
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
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
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
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour 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
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		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
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	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]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	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
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Glareola maldivarum Oriental Pratincole [840]		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 likely 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 brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [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.

Name
Commonwealth Land -
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Garden Island	WA	Listed place

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
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	Foraging, feeding or related behaviour likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres		
Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris alba		
Sanderling [875]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	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]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may 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	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely 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	Foraging, feeding or related behaviour likely to 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	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area

Name	Threatened	Type of Presence
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area
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
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within 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
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
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely 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
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within 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 likely

Name	Threatened	Type of Presence
		to occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Breeding known to occur within area
Puffinus griseus Sooty Shearwater [1024]		Species or species habitat may occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Puffinus tenuirostris Short-tailed Shearwater [1029]		Breeding known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may 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	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		

Name	Threatened	Type of Presence
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
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

Name	Threatened	Type of Presence
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
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptiles		
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Seasnake [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
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Disteira major		
Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Ephalophis greyi		
North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus		
Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
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
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 may occur within area
Delphinus delphis		
Common Dophin, 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
Grampus griseus		
Risso's Dolphin, Grampus [64]		Species or species habitat may occur within

Name	Status	Type of Presence
		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 simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		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]	Vulnerable	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
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

Name	Status	Type of Presence
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
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]

Name	Label
Abrolhos	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Special Purpose Zone (IUCN VI)
Bremer	National Park Zone (IUCN II)
Bremer	Special Purpose Zone (Mining
Eastern Recherche	National Park Zone (IUCN II)
Eastern Recherche	Special Purpose Zone (IUCN VI)
Geographe	Habitat Protection Zone (IUCN IV)
Geographe	Multiple Use Zone (IUCN VI)
Geographe	National Park Zone (IUCN II)
Geographe	Special Purpose Zone (Mining
Great Australian Bight	Special Purpose Zone (Mining
Jurien	Special Purpose Zone (IUCN VI)
South-west Corner	Habitat Protection Zone (IUCN IV)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	Special Purpose Zone (IUCN VI)
South-west Corner	Special Purpose Zone (Mining
Twilight	National Park Zone (IUCN II)
Twilight	Special Purpose Zone (Mining
Two Rocks	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Bald Island	WA
Boullanger, Whitlock, Favourite, Tern And Osprey Islands	WA
Eclipse Island	WA
Escape Island	WA
Flinders Bay	WA
Penguin Island	WA
Recherche Archipelago	WA
St Alouarn Island	WA
Unnamed WA44682	WA
Unnamed WA48968	WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Key Ecological Features (Marine)

[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 90-120m depth	South-west
Commonwealth marine environment surrounding	South-west
Commonwealth marine environment within and	South-west
Commonwealth marine environment within and	South-west
Diamantina Fracture Zone	South-west
Naturaliste Plateau	South-west
Western demersal slope and associated fish	South-west
Western rock lobster	South-west

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-25.765206 109.237891,-25.725623 109.501563,-25.992551 109.732276,-25.992551 109.875098,-26.071525 110.182716,-26.229314 110.325538,-25.656321 112.127296,-27.717513 112.984229,-27.814726 114.02793,-28.202708 114.159766,-28.483117 114.445411,-28.695347 114.577247,-28.974447 114.599219,-29.147305 114.818946,-29.530391 114.950782,-29.921554 114.89585,-30.746498 115.082618,-31.517621 115.533057,-31.863505 115.730811,-32.523601 115.67588,-32.634692 115.544044,-33.16049 115.620948,-33.619137 115.302344,-33.49096 114.994727,-33.737988 114.928809,-34.275319 114.972755,-34.46575 115.126563,-34.366055 115.269385,-34.818257 115.917579,-34.908402 116.060401,-35.106373 116.598731,-35.11536 117.389747,-35.169263 117.774268,-35.169263 118.081885,-34.980447 118.312598,-34.402321 119.663917,-34.30255 119.56504,-34.029844 119.883643,-33.938746 120.960303,-33.911398 121.399757,-34.011632 121.949073,-34.102652 122.476417,-34.038948 123.432227,-33.591687 124.091407,-33.10529 124.212257,-32.902593 125.014258,-32.319576 126.134864,-32.375265 127.123633,-31.760809 129.035255,-35.294897 129.068214,-35.634921 127.541114,-37.453004 125.157081,-37.696807 123.058692,-37.688114 120.817481,-38.46644 118.664161,-38.337294 115.697852,-37.418109 113.368751,-36.584603 112.028419,-34.998448 111.061622,-33.545916 110.973731,-31.984725 111.512061,-31.414542 111.270362,-30.026241 110.182716,-28.396173 109.798194,-27.756409 109.875098,-25.765206 109.237891,-25.765206 109.237891

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

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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

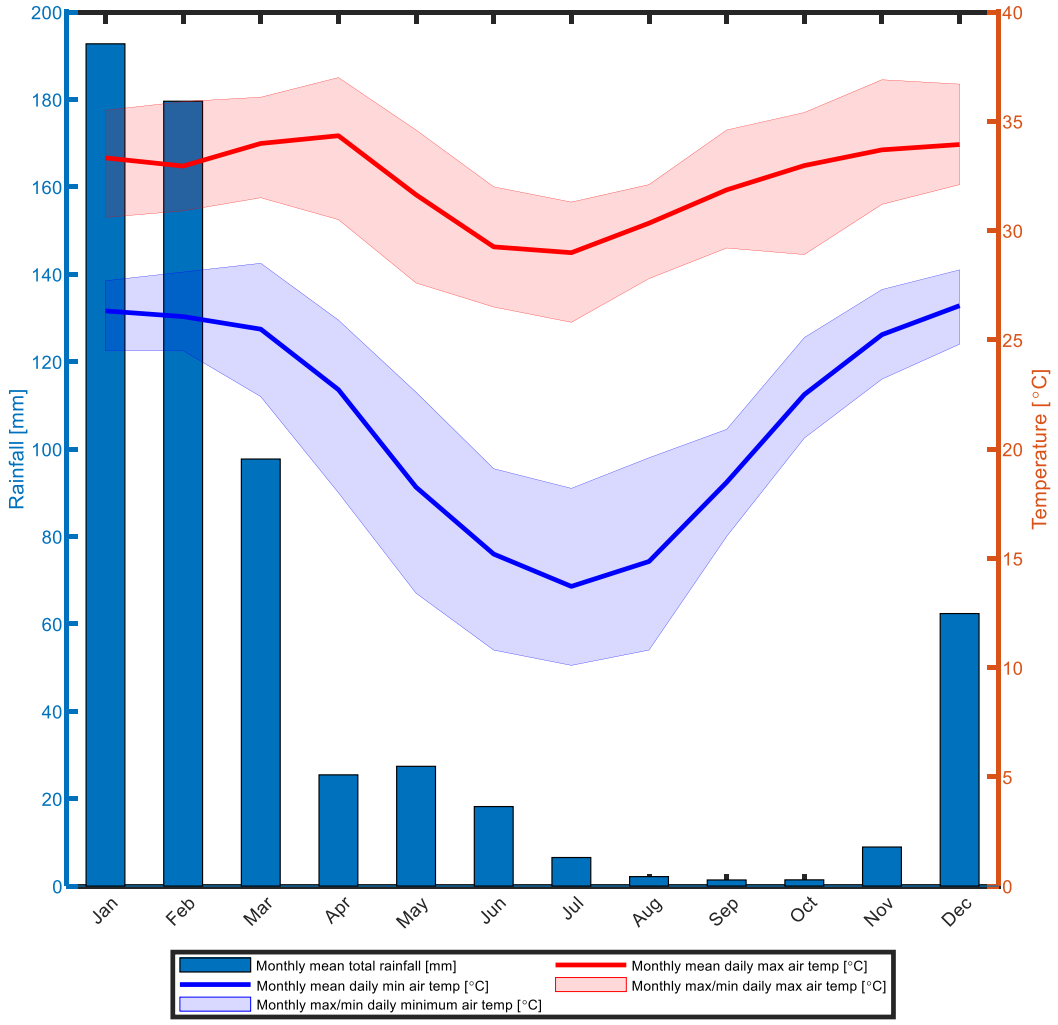


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

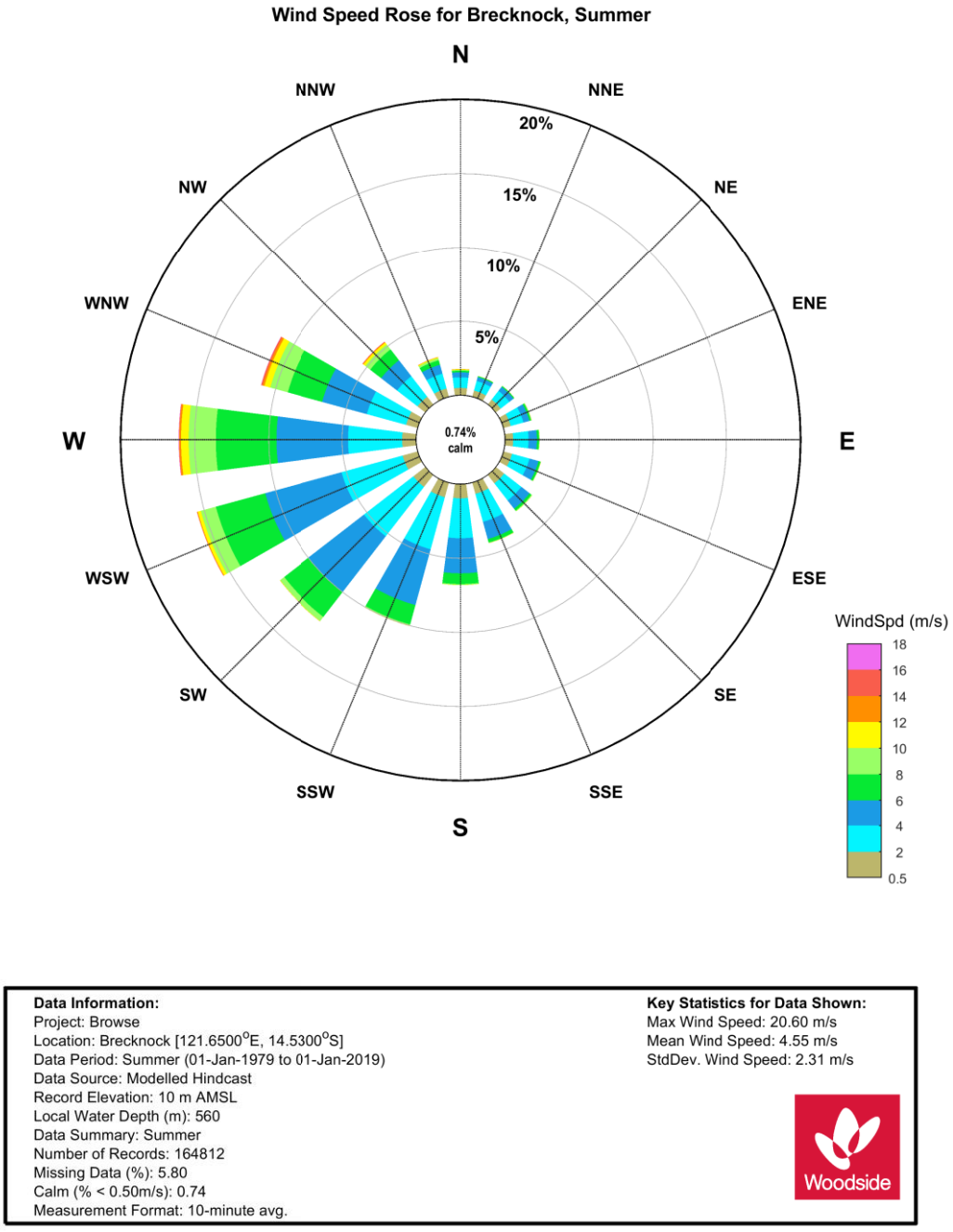
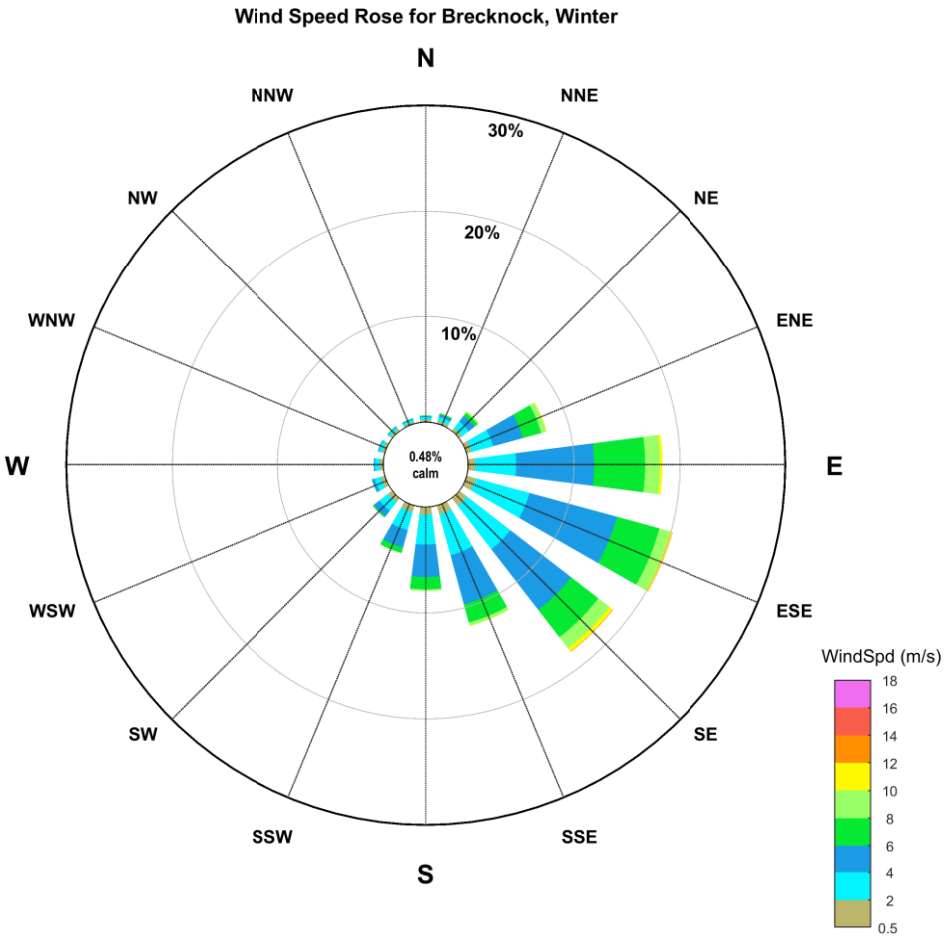


Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West 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).

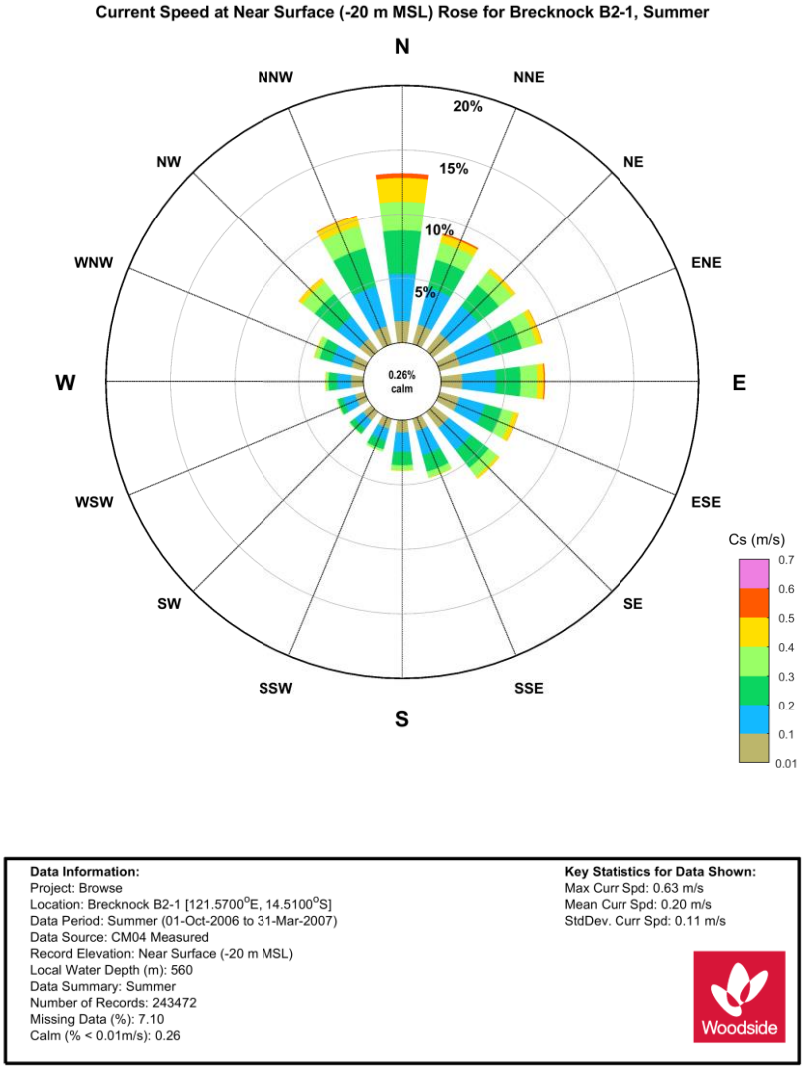
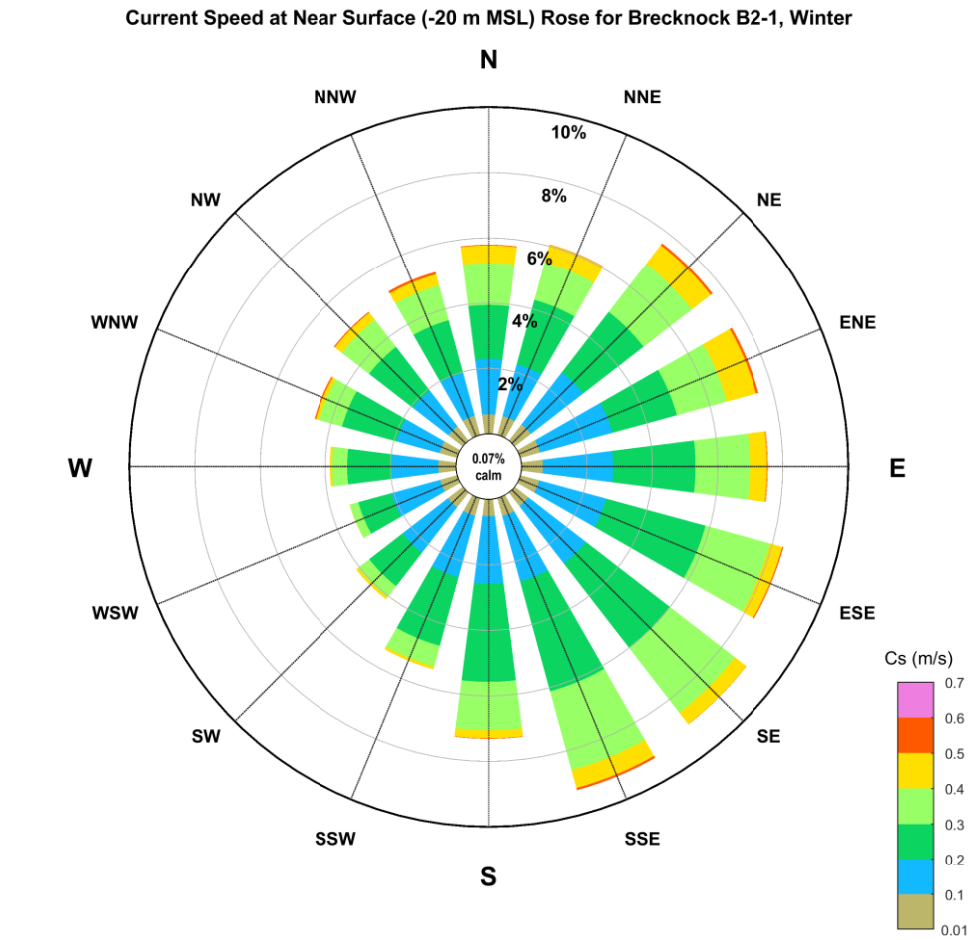


Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).



Data Information:
Project: Browse
Location: Brecknock B2-1 [121.5700°E, 14.5100°S]
Data Period: Winter (17-Sep-2006 to 08-Sep-2007)
Data Source: CM04 Measured
Record Elevation: Near Surface (-20 m MSL)
Local Water Depth (m): 560
Data Summary: Winter
Number of Records: 246184
Missing Data (%): 1.46
Calm (% < 0.01m/s): 0.07

Key Statistics for Data Shown:
Max Curr Spd: 0.62 m/s
Mean Curr Spd: 0.24 m/s
StdDev. Curr Spd: 0.10 m/s

Woodside

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

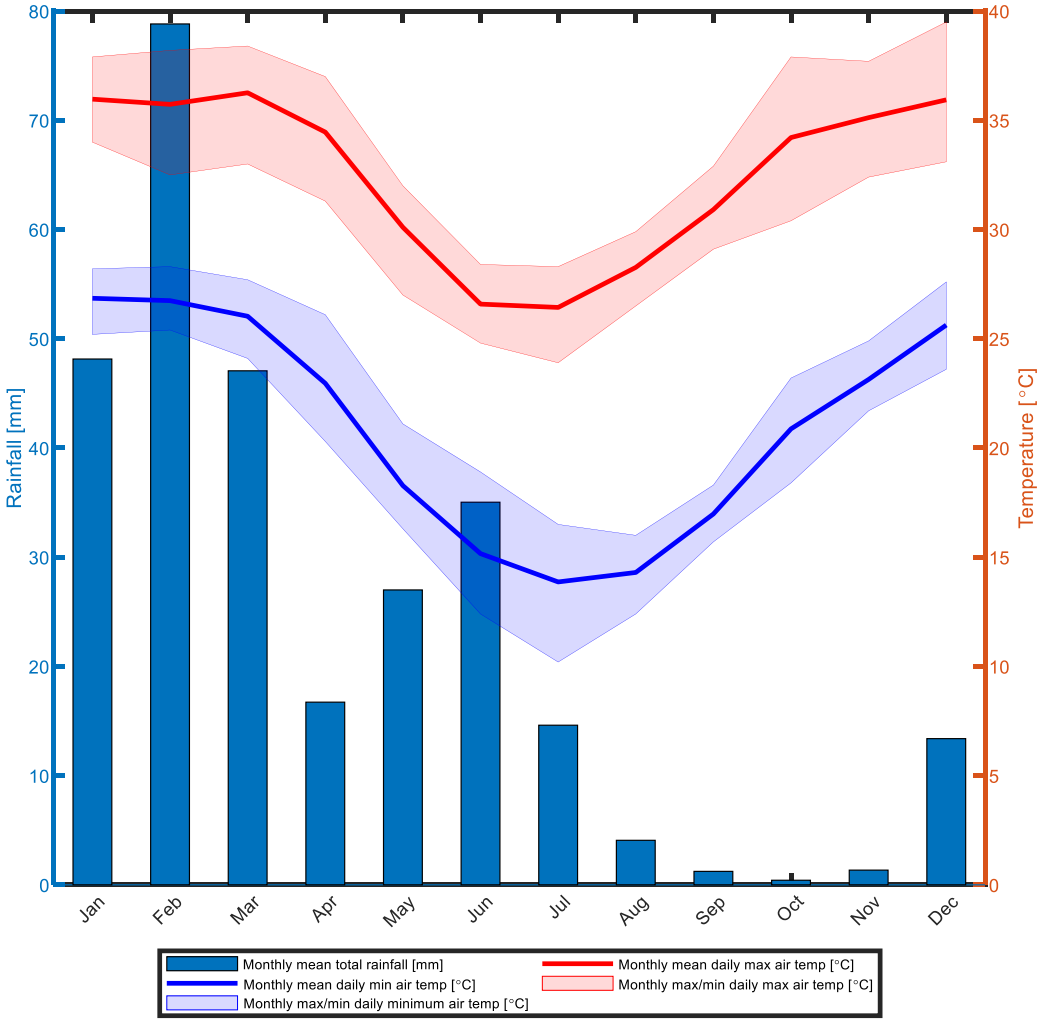
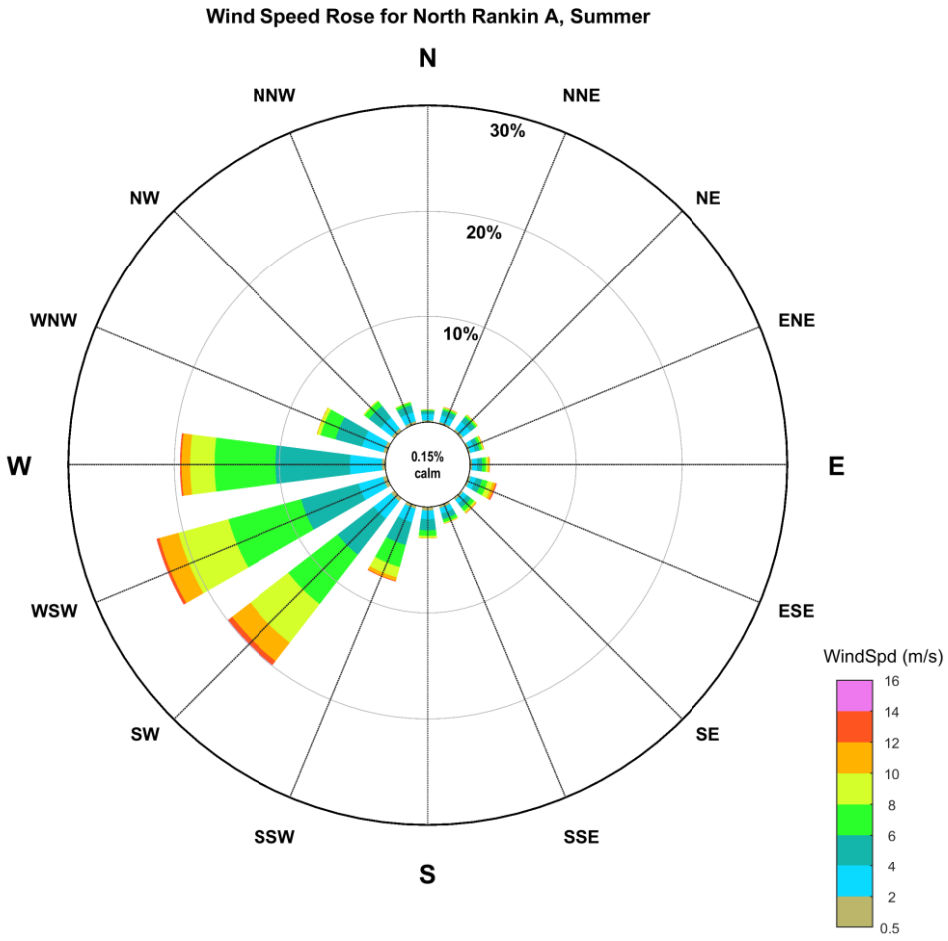


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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.

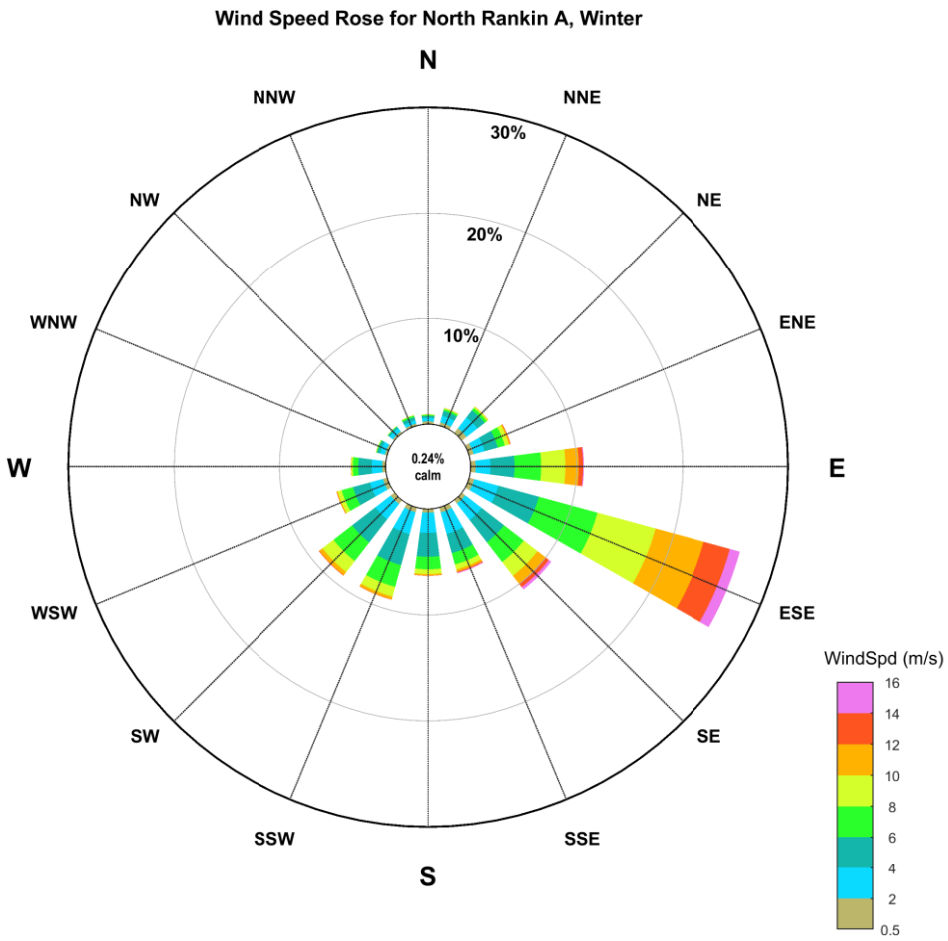


Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Summer (01-Oct-1995 to 30-Nov-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Summer
Number of Records: 674659
Missing Data (%): 7.24
Calm (% < 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

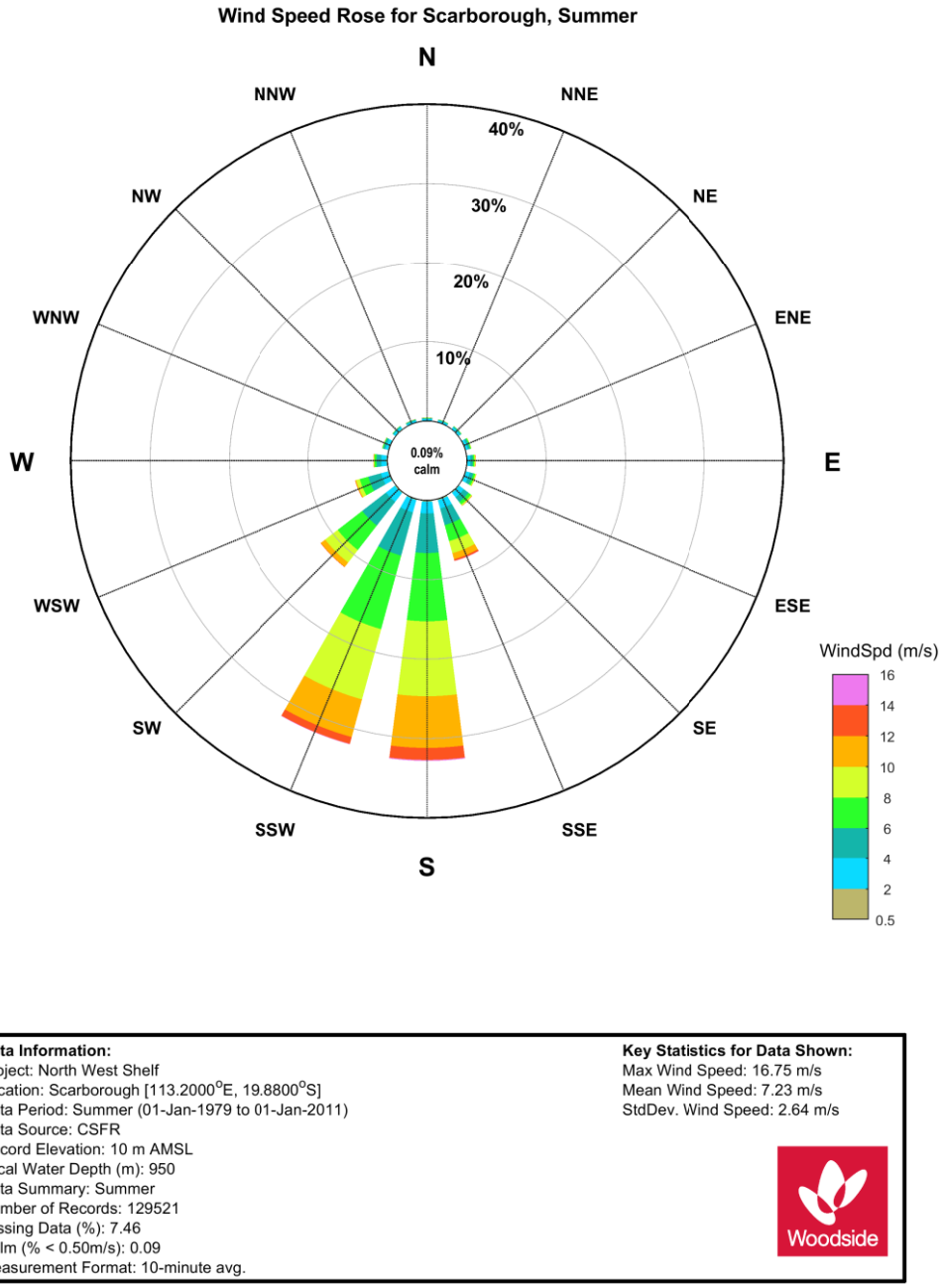
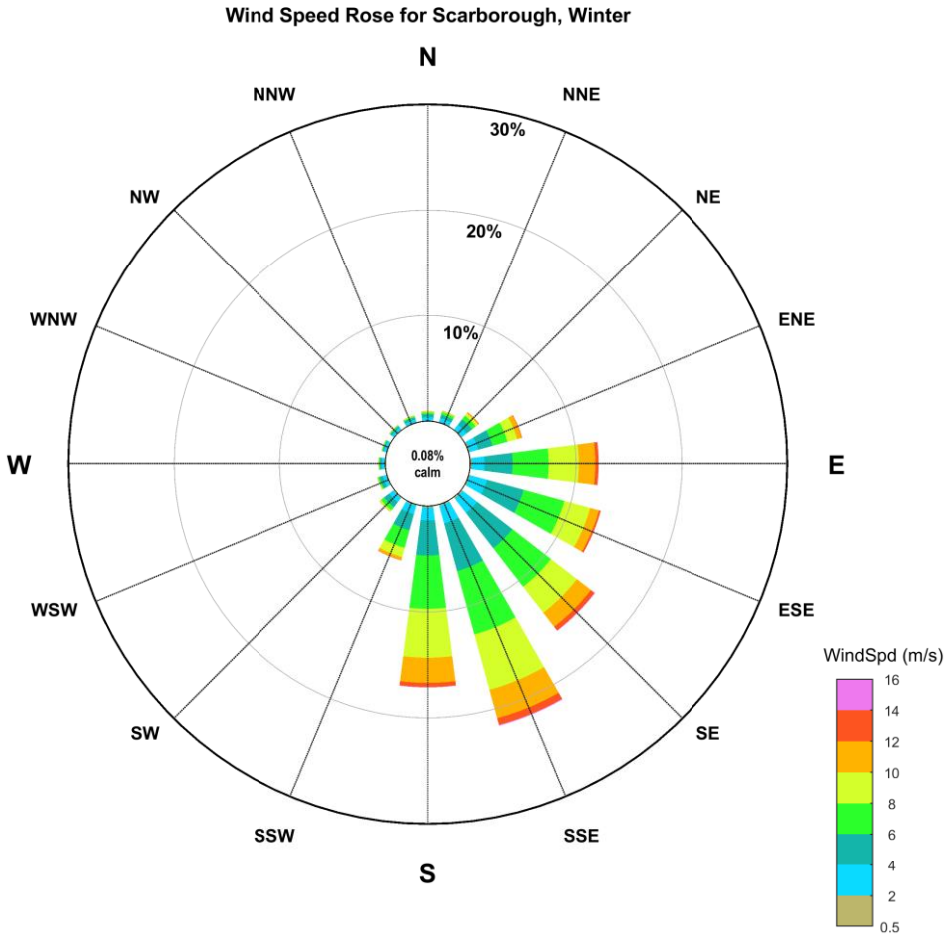


Figure 4. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8] SW winds are also experienced at this site due to the monsoon trough.



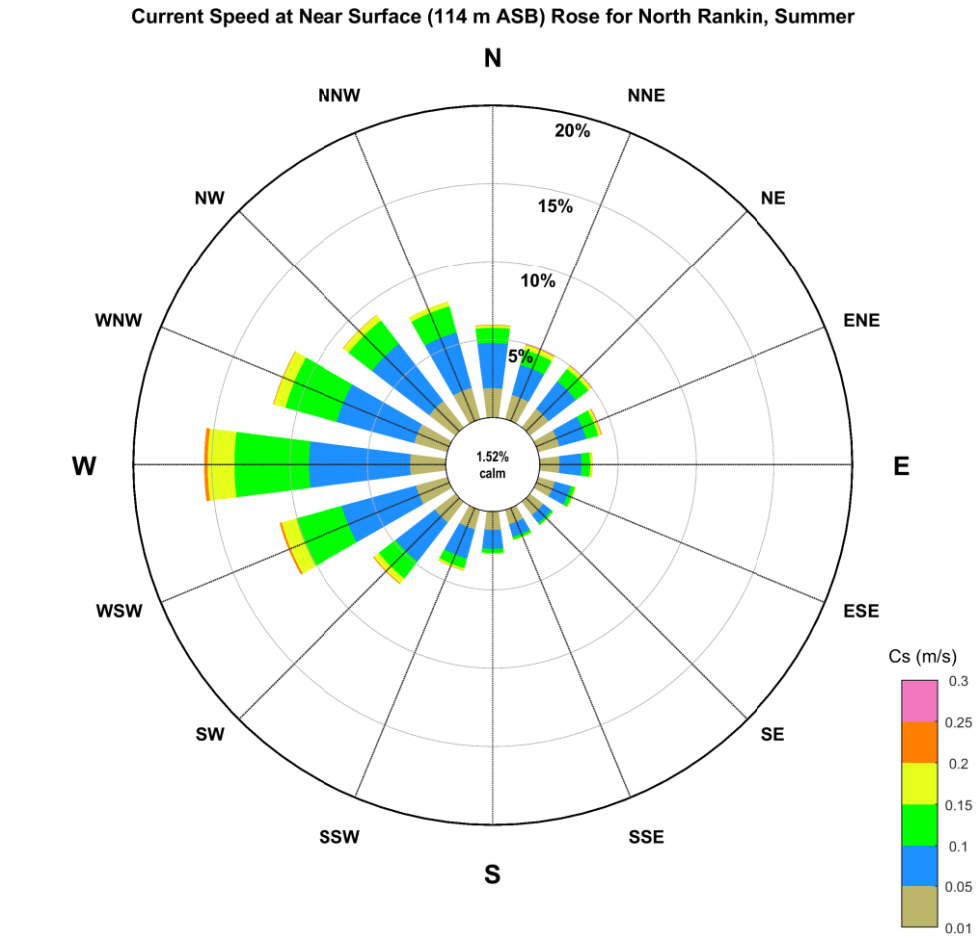
Data Information:
Project: North West Shelf
Location: Scarborough [113.2000°E, 19.8800°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2010)
Data Source: CSFR
Record Elevation: 10 m AMSL
Local Water Depth (m): 950
Data Summary: Winter
Number of Records: 138863
Missing Data (%): 1.20
Calm (% < 0.50m/s): 0.08
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 19.15 m/s
Mean Wind Speed: 6.90 m/s
StdDev. Wind Speed: 2.57 m/s

Woodside

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

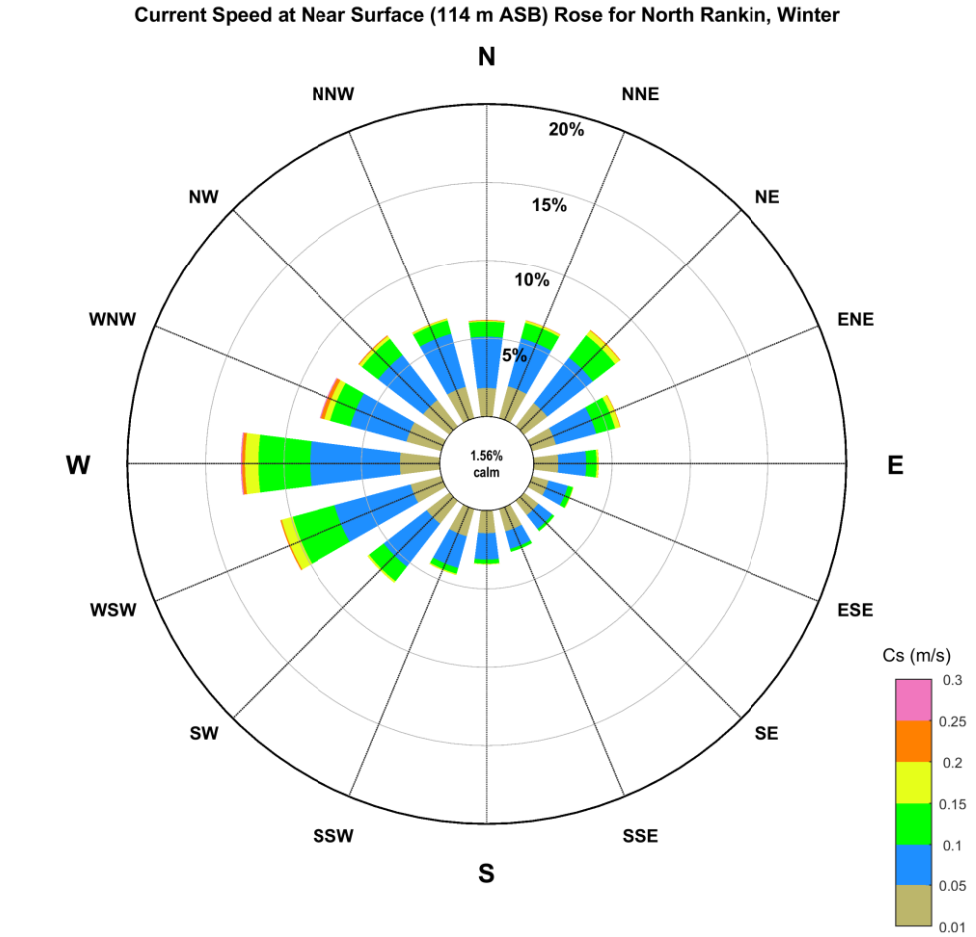


Data Information:
Project: North West Shelf
Location: North Rankin [116.1400°E, 19.5800°S]
Data Period: Summer (01-Oct-2004 to 31-Mar-2009)
Data Source: Measured Data
Record Elevation: Near Surface (114 m ASB)
Local Water Depth (m): 124.5
Data Summary: Summer
Number of Records: 496705
Missing Data (%): 6.63
Calm (% < 0.01m/s): 1.52

Key Statistics for Data Shown:
Max Curr Spd: 0.49 m/s
Mean Curr Spd: 0.08 m/s
StdDev. Curr Spd: 0.04 m/s

Woodside

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).



Data Information:
Project: North West Shelf
Location: North Rankin [116.1400°E, 19.5800°S]
Data Period: Winter (21-Sep-2004 to 08-May-2009)
Data Source: Measured Data
Record Elevation: Near Surface (114 m ASB)
Local Water Depth (m): 124.5
Data Summary: Winter
Number of Records: 337723
Missing Data (%): 0.88
Calm (% < 0.01m/s): 1.56

Key Statistics for Data Shown:
Max Curr Spd: 0.32 m/s
Mean Curr Spd: 0.07 m/s
StdDev. Curr Spd: 0.04 m/s

Woodside

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

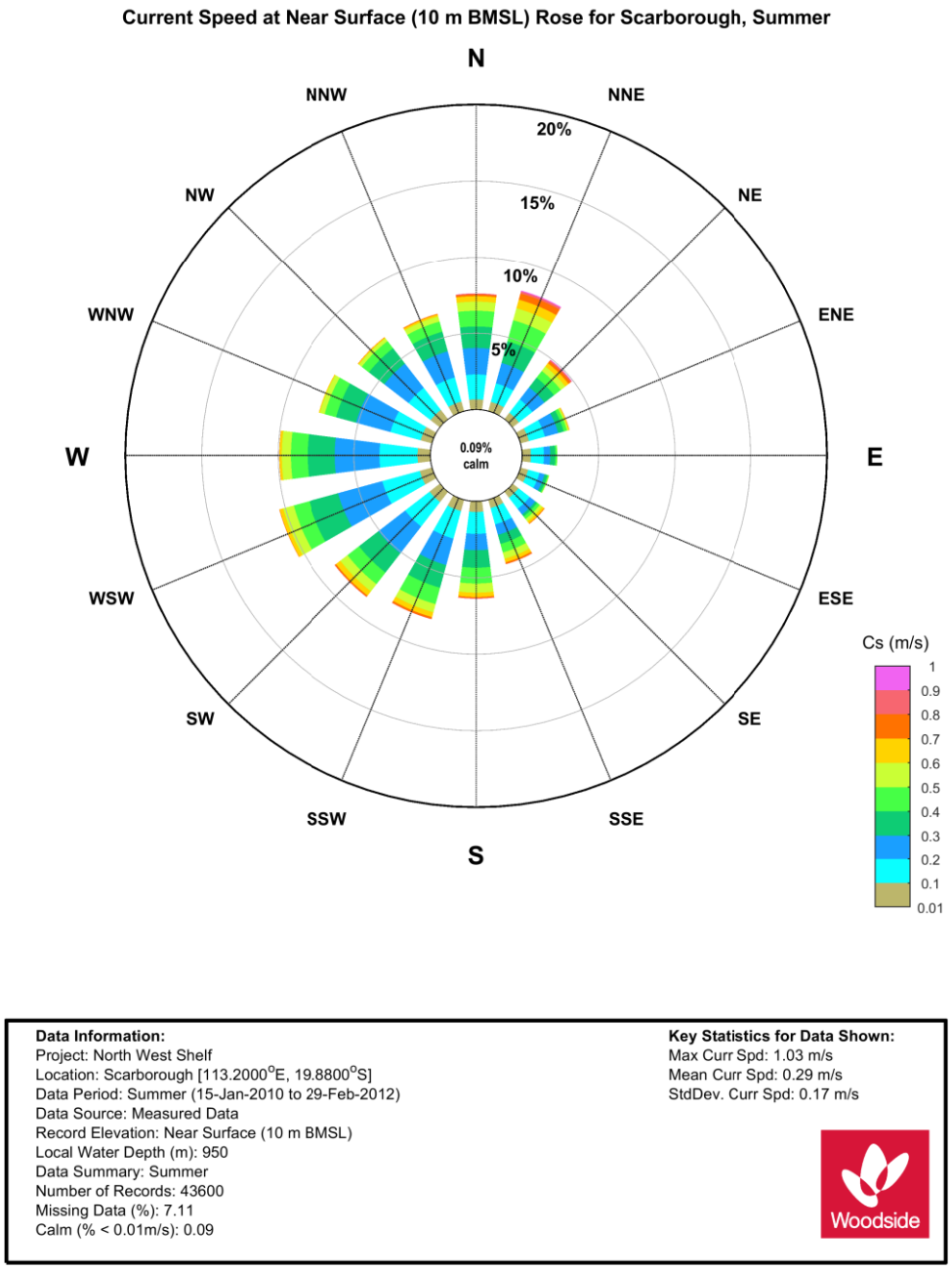


Figure 8. Summer (Nov - April) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

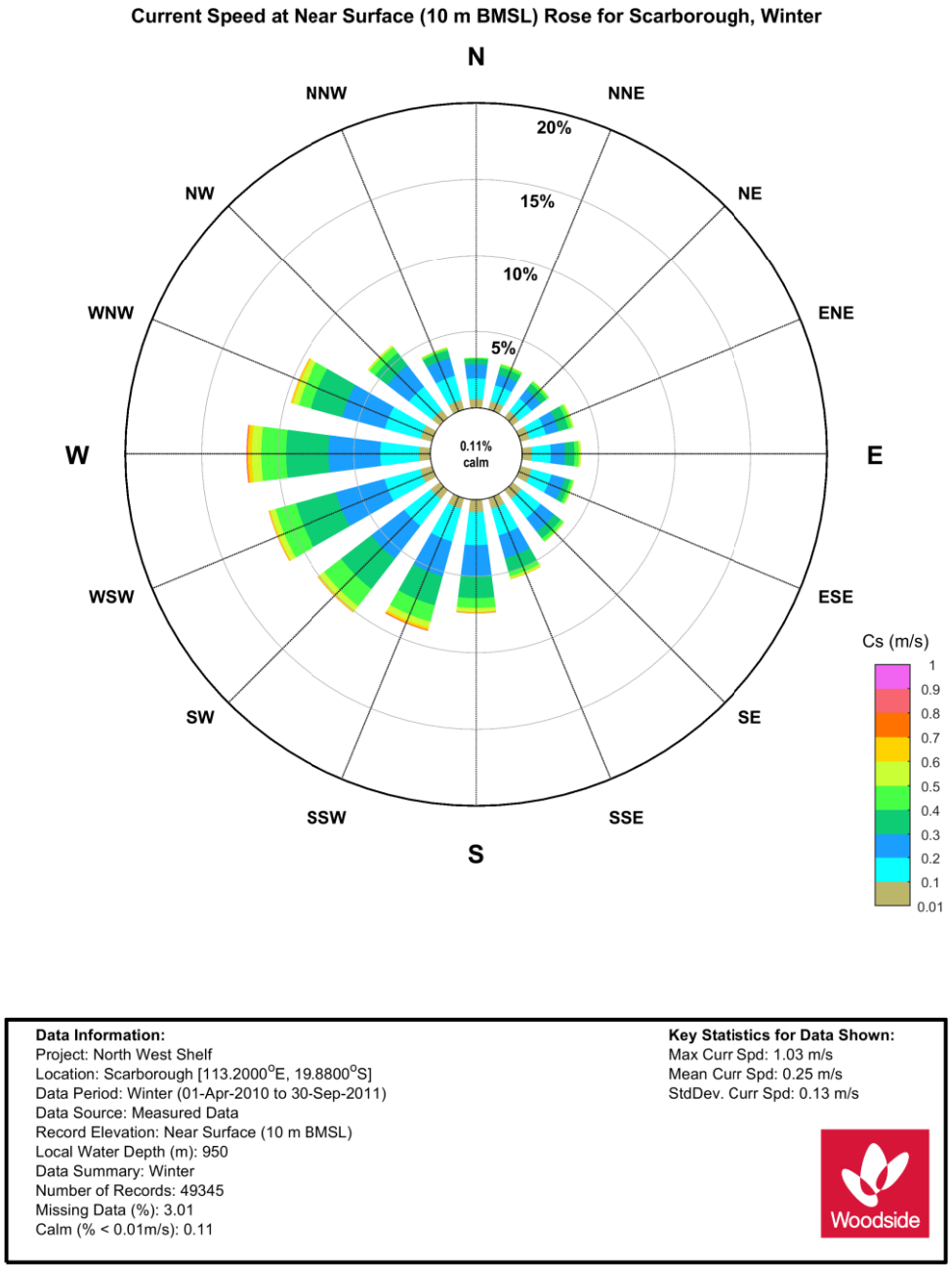


Figure 9. Winter (May-Sep) near surface combined frequency of 1-min mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

North-west Cape

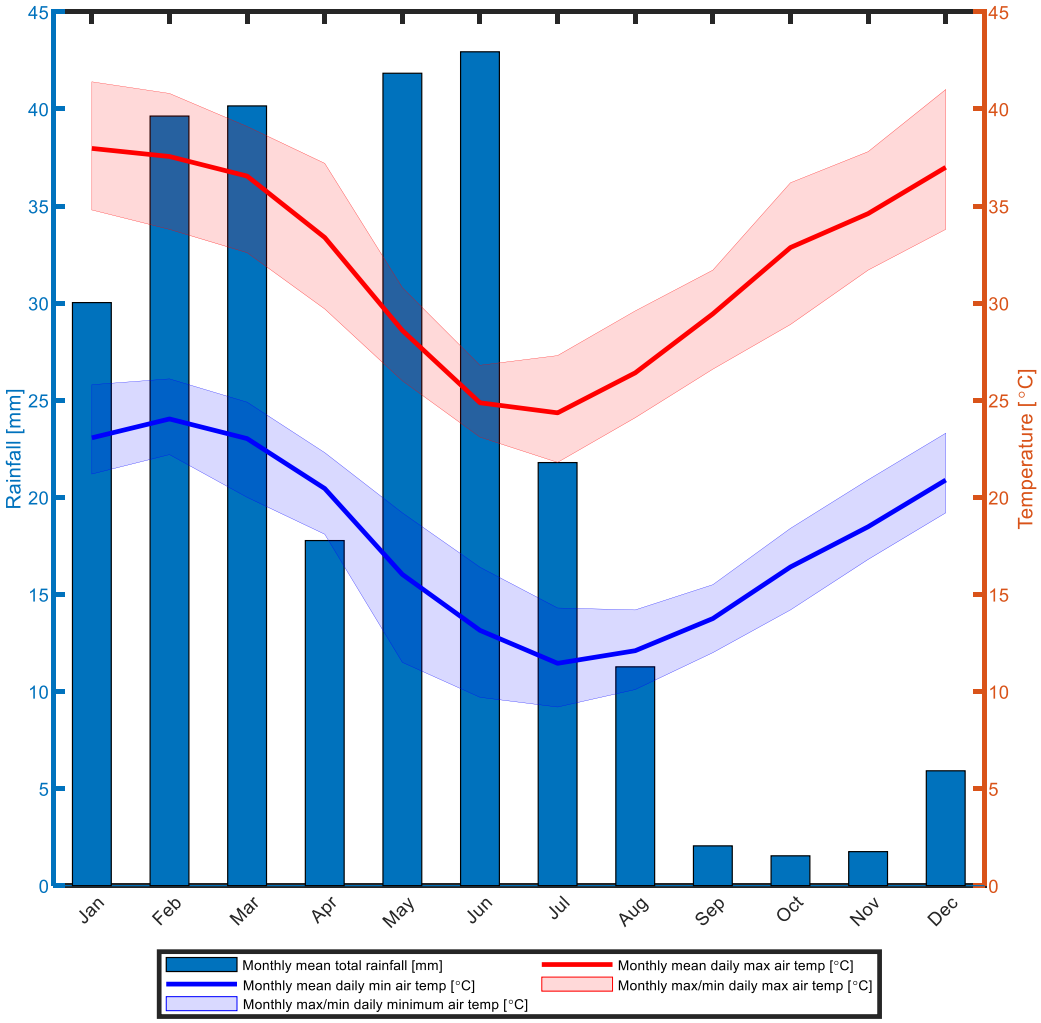


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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.

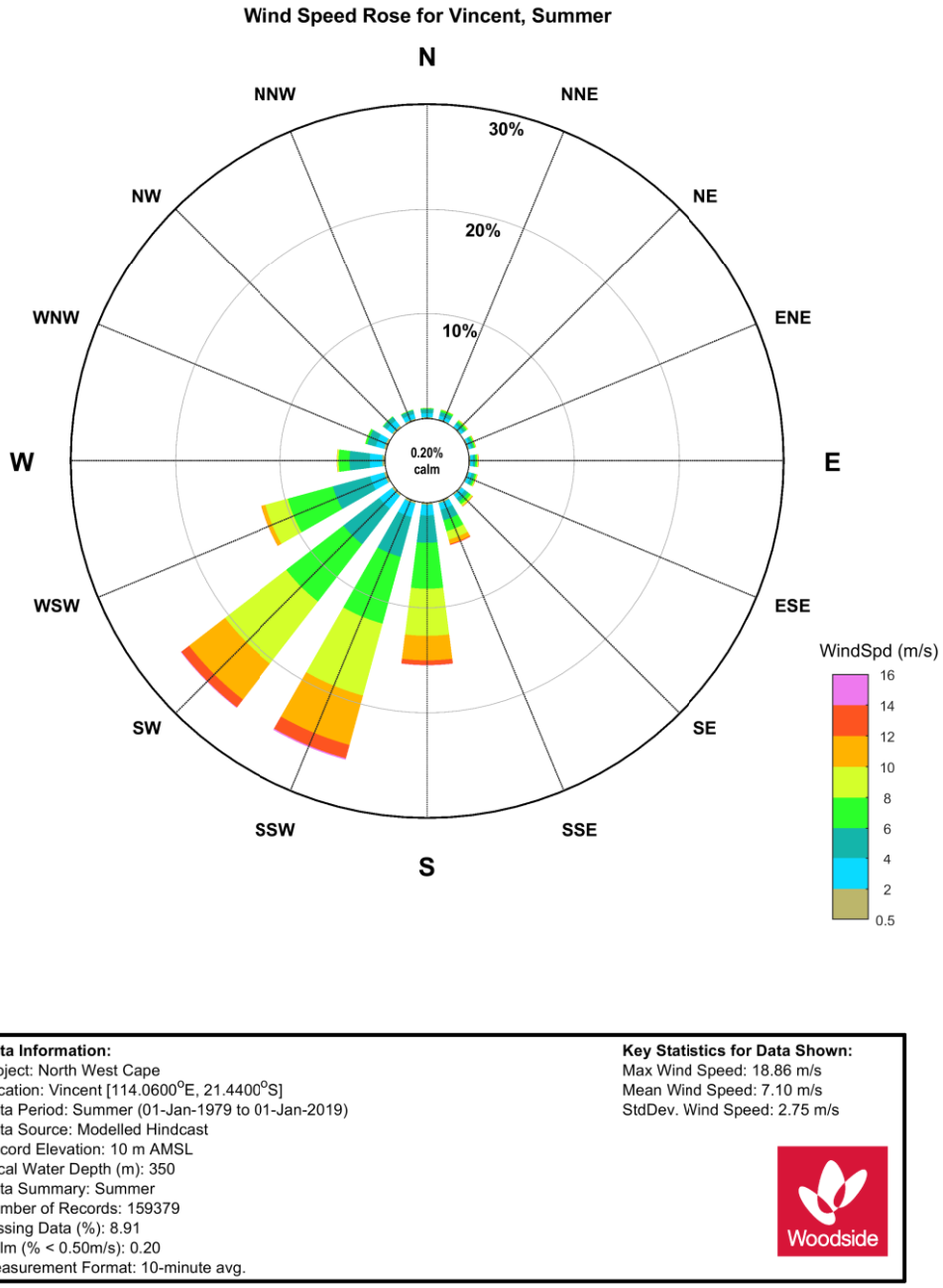
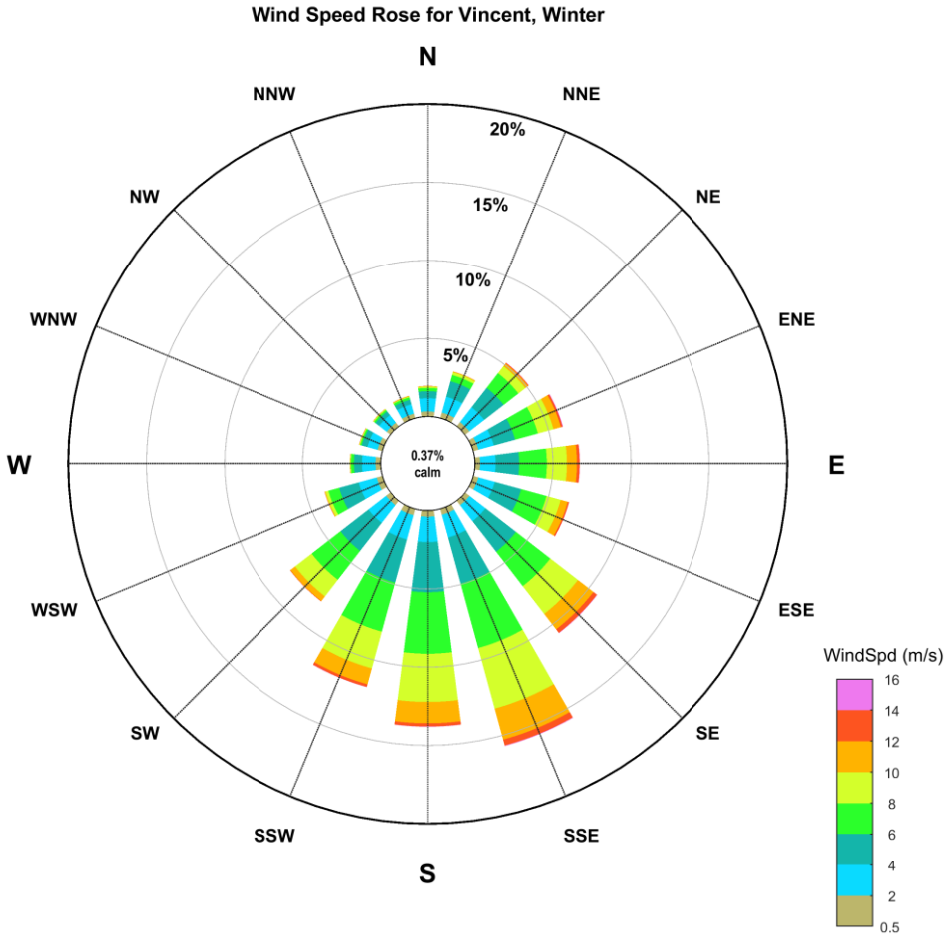


Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).

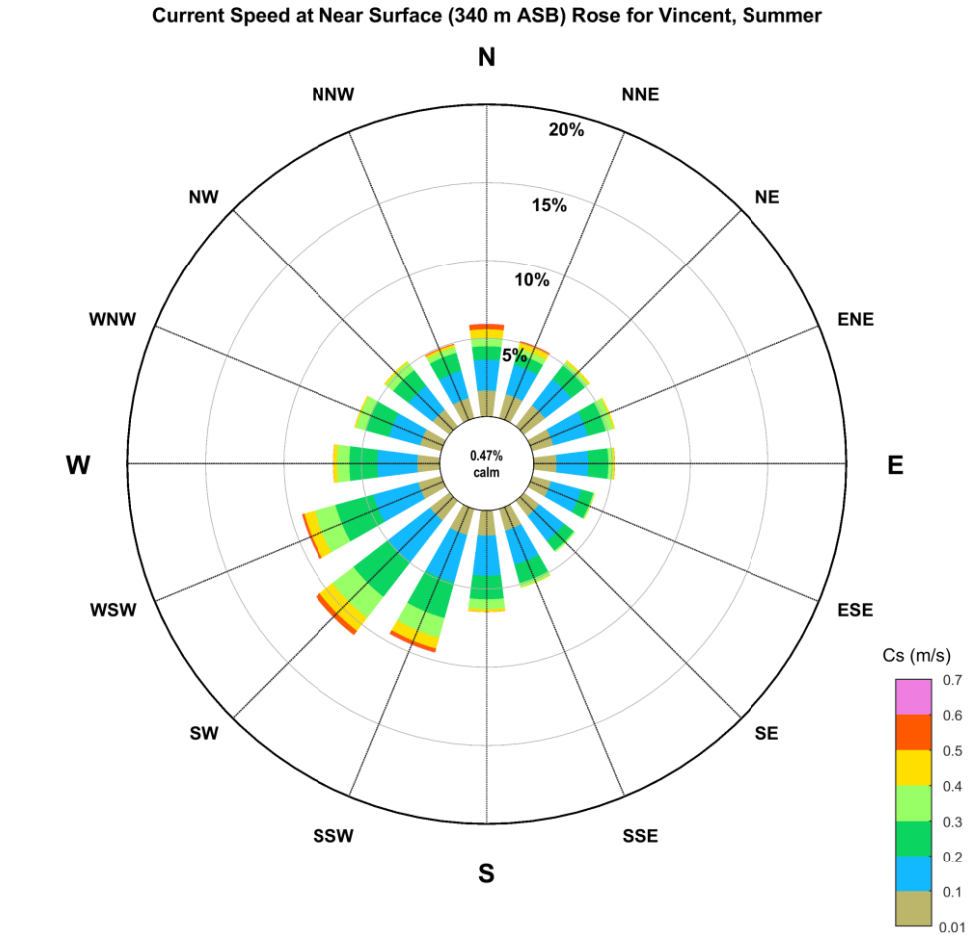


Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 350
Data Summary: Winter
Number of Records: 173626
Missing Data (%): 1.17
Calm (% < 0.50m/s): 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).

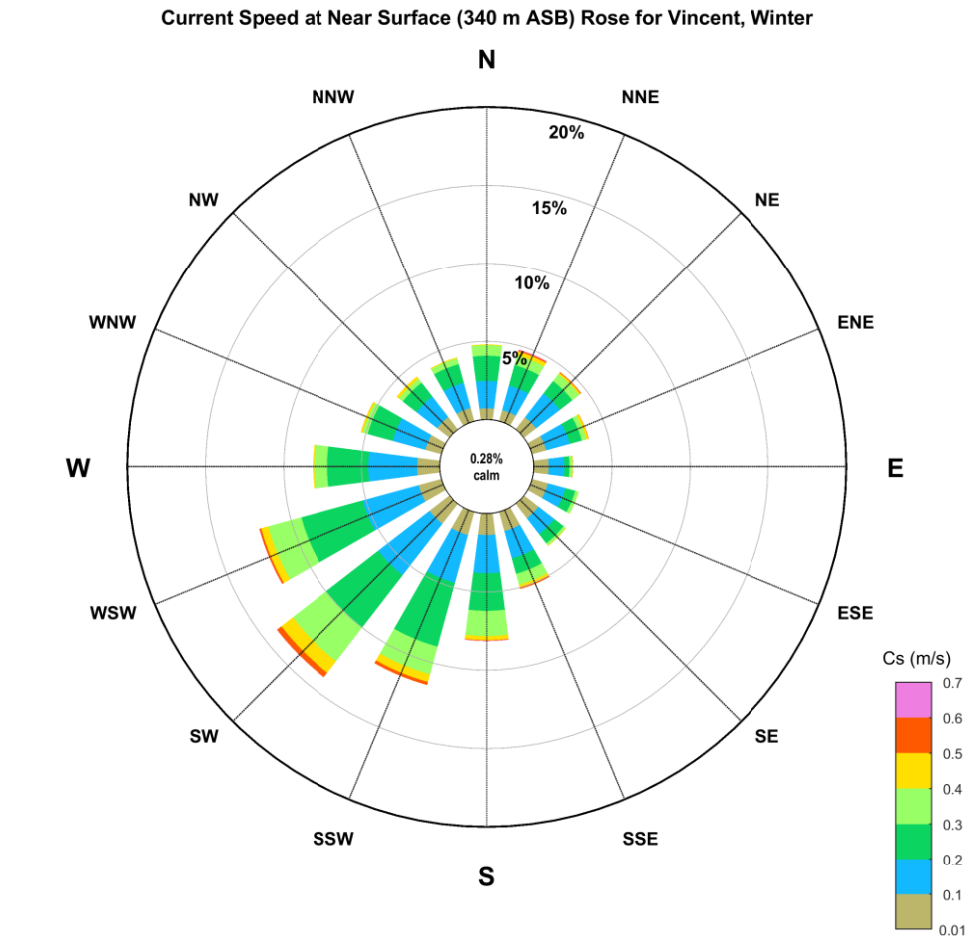


Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Summer (21-Nov-2000 to 13-Dec-2001)
Data Source: Measured Data
Record Elevation: Near Surface (340 m ASB)
Local Water Depth (m): 350
Data Summary: Summer
Number of Records: 144668
Missing Data (%): 1.59
Calm (% < 0.01m/s): 0.47

Key Statistics for Data Shown:
Max Curr Spd: 0.75 m/s
Mean Curr Spd: 0.19 m/s
StdDev. Curr Spd: 0.11 m/s

Woodside

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).



Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Winter (01-Apr-2001 to 30-Sep-2001)
Data Source: Measured Data
Record Elevation: Near Surface (340 m ASB)
Local Water Depth (m): 350
Data Summary: Winter
Number of Records: 126313
Missing Data (%): 4.13
Calm (% < 0.01m/s): 0.28

Key Statistics for Data Shown:
Max Curr Spd: 0.64 m/s
Mean Curr Spd: 0.20 m/s
StdDev. Curr Spd: 0.11 m/s

Woodside

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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