



# **Scarborough Seabed Intervention and Trunkline Installation Environment Plan**

October 2023

Revision 6

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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, North Scarborough, Thebe and Jupiter gas fields (Figure 3-1). 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:

- installation and pre-commissioning of the trunkline
- installation of Pipeline End Termination (PLET) and foundations
- seabed intervention activities to support the trunkline.

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 broader Scarborough Offshore Project Proposal (Scarborough OPP) accepted by NOPSEMA on 30 March 2020. The Scarborough primary approval process is outlined in Section 1.9.1.1 and Section 3.3 highlights concordance with the Scarborough OPP.

## 1.2 Defining the Petroleum Activity

The Petroleum Activities Program to be undertaken comprises pipeline construction activities and work and other things that are necessary for, or incidental to the construction of a pipeline as defined under section 211(1)(d)(i) of the OPGGS Act, to be specified in the proposed pipeline licence, which are petroleum activities 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.
- 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 (MCs). 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 Trunkline Project Area, (the proposed trunkline from and 1.5 km either side of the proposed trunkline centreline) and the Offshore Borrow Ground Project Area. The combination of the Project Areas defines the Operational Area and the spatial boundary of the Petroleum Activities Program, as described, risk assessed and managed by this EP, including vessel related petroleum activities.

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 Operational Area by project 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, materials transshipment) 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
Details of the environmental impacts and risks	Section 6
The control measures for the activity	Section 6
The arrangements for ongoing monitoring of the titleholder's environmental performance	Section 7
Response arrangements in the oil pollution emergency plan	Section 7.19
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): <i>Is appropriate for the nature and scale of the activity</i>	Regulation 13: <i>Environmental assessment</i> Regulation 14: <i>Implementation strategy for the environment plan</i> Regulation 16: <i>Other information in the environment plan</i>	The principle of 'nature and scale' is applicable throughout the EP.	Section 2 Section 3 Section 4 Section 5 Section 6 Section 7
Regulation 10A(b): <i>Demonstrates that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable</i>	Regulation 13(1)–13(7): <i>13(1) Description of the activity</i> <i>13(2)(3) Description of the environment</i> <i>13(4) Requirements</i> <i>13(5)(6) Evaluation of environmental impacts and risks</i> <i>13(7) Environmental Performance Outcomes and standards</i>	Set the context (activity and existing environment). Define 'acceptable' (the requirements, the corporate policy, relevant persons). Detail the impacts and risks.	Section 1 Section 2 Section 3 Section 4 Section 5 Section 6 Section 7
Regulation 10A(c): <i>Demonstrates that the environmental impacts and risks of the activity will be of an acceptable level</i>	Regulation 16(a) to 16(c): <i>A statement of the titleholder's corporate environmental policy</i> <i>A report on all consultations between the titleholder and any relevant person</i>	Evaluate the nature and scale. Detail the control measures – ALARP and acceptable.	
Regulation 10A(d): <i>Provides for appropriate Environmental Performance Outcomes, environmental performance standards and measurement criteria</i>	Regulation 13(7): <i>Environmental Performance Outcomes and standards</i>	Environmental Performance Outcomes (EPO). Environmental performance standards (EPS). Measurement criteria (MC).	Section 6
Regulation 10A(e): <i>Includes an appropriate implementation strategy and monitoring, recording and reporting arrangements</i>	Regulation 14: <i>Implementation strategy for the environment plan</i>	Implementation strategy, including: <ul style="list-style-type: none"> <li>• Environmental Management System (EMS)</li> <li>• Performance monitoring</li> <li>• Oil Pollution Emergency Plan (OPEP – per Table 7-12) and scientific monitoring</li> <li>• Ongoing consultation</li> </ul>	Section 7



Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
<p>Regulation 10A(f): <i>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)</i></p>	<p>Regulation 13(1)–13(3):                      13(1) <i>Description of the activity</i>                      13(2) <i>Description of the environment</i>                      13(3) <i>Without limiting [Regulation 13(2)(b)], relevant values and sensitivities may include any of the following:</i>                      (a) <i>the world heritage values of a declared World Heritage property within the meaning of the EPBC Act;</i>                      (b) <i>the national heritage values of a National Heritage place within the meaning of that Act;</i>                      (c) <i>the ecological character of a declared Ramsar wetland within the meaning of that Act;</i>                      (d) <i>the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act;</i>                      (e) <i>the presence of a listed migratory species within the meaning of that Act;</i>                      (f) <i>any values and sensitivities that exist in, or in relation to, part or all of:</i>                      (i) <i>a Commonwealth marine area within the meaning of that Act; or</i>                      (ii) <i>Commonwealth land within the meaning of that Act.</i></p>	<p>No activity, or part of the activity, undertaken in any part of a declared World Heritage property.</p>	<p>Section 3 Section 4</p>
<p>Regulation 10A(g):                      (i) <i>the titleholder has carried out the consultations required by Division 2.2A</i>                      (ii) <i>the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate</i></p>	<p>Regulation 11A: <i>Consultation with relevant authorities, persons and organisations, etc.</i>                      Regulation 16(b): <i>A report on all consultations between the titleholder and any relevant person</i></p>	<p>Consultation undertaken in the preparation of this EP.</p>	<p>Section 4</p>
<p>Regulation 10A(h): <i>Complies with the Act and the regulations</i></p>	<p>Regulation 13(4)a: <i>Describe the requirements, including legislative requirements, that apply to activity and are relevant to the environmental management of the activity</i>                      Regulation 15: <i>Details of the Titleholder and liaison person</i>                      Regulation 16(a): <i>A statement of the titleholder's corporate environmental policy</i>                      Regulation 16(c): <i>Details of all reportable incidents in relation to the proposed activity</i></p>	<p>All contents of the EP must comply with the <i>Offshore Petroleum and Greenhouse Gas Storage Act 2006</i> and the <i>Environment Regulations</i></p>	<p>Section 1 Section 3 Section 6 Appendix A Appendix B</p>

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## 1.7 Description of the Titleholder

Woodside is Operator of the various joint ventures relating to the Scarborough Project, which comprises the Scarborough, North Scarborough, Thebe and Jupiter fields. The joint ventures comprise both Woodside Energy Scarborough Pty Ltd and Woodside Energy (Australia) Pty Ltd.

As Australia's leading LNG operator, Woodside operated 6% of global LNG supply in 2020. LNG is a lower-emissions, competitive fuel ideally suited to supporting decarbonisation and improving air quality. Woodside is working to improve its energy efficiency, offset emissions, reduce emissions intensity and explore options for lower-carbon energy. Woodside has set clear targets to reduce our net emissions in line with our aspiration to achieve net zero by 2050.

In Western Australia, Woodside is building on more than 30 years of experience and progressing development of the Scarborough gas resource through the world-class Pluto LNG facility. Woodside is also connecting Pluto LNG with the landmark North West Shelf Project to create an integrated LNG production hub on the Burrup Peninsula.

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 titleholder, liaison person and arrangements for the notification of changes are described below.

### 1.8.1 Titleholder

*Woodside Energy Scarborough Pty Ltd:*  
11 Mount Street, Perth, Western Australia  
Telephone: 08 9348 4000  
Fax Number: 08 9214 2777  
ABN: 650 177 227

### 1.8.2 Nominated Liaison Person

*Andrew Winter*  
Corporate Affairs Manager  
11 Mount Street, Perth, Western Australia  
Phone: 08 9348 4000  
Fax Number: 08 9214 2777  
[feedback@woodside.com.au](mailto:feedback@woodside.com.au)

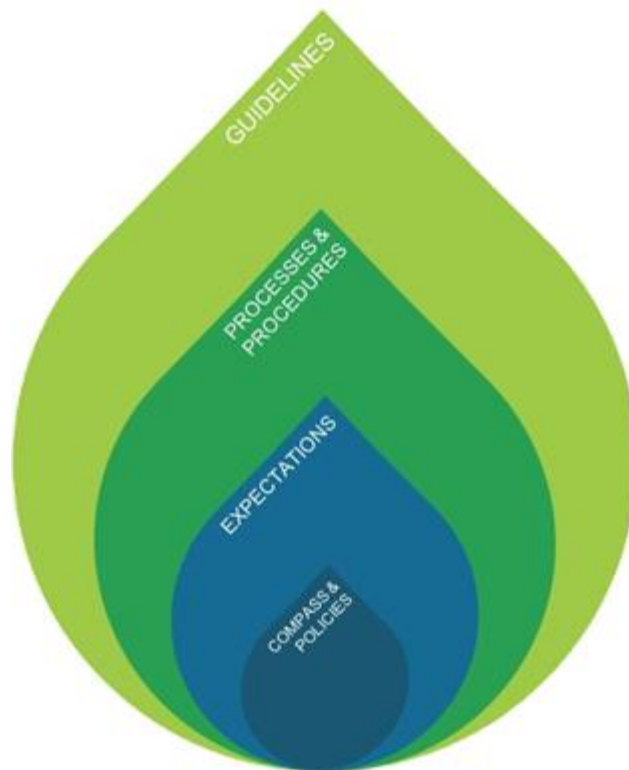
### 1.8.3 Arrangements for Notifying of Change

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

### 1.8.4 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 2.2.3 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.

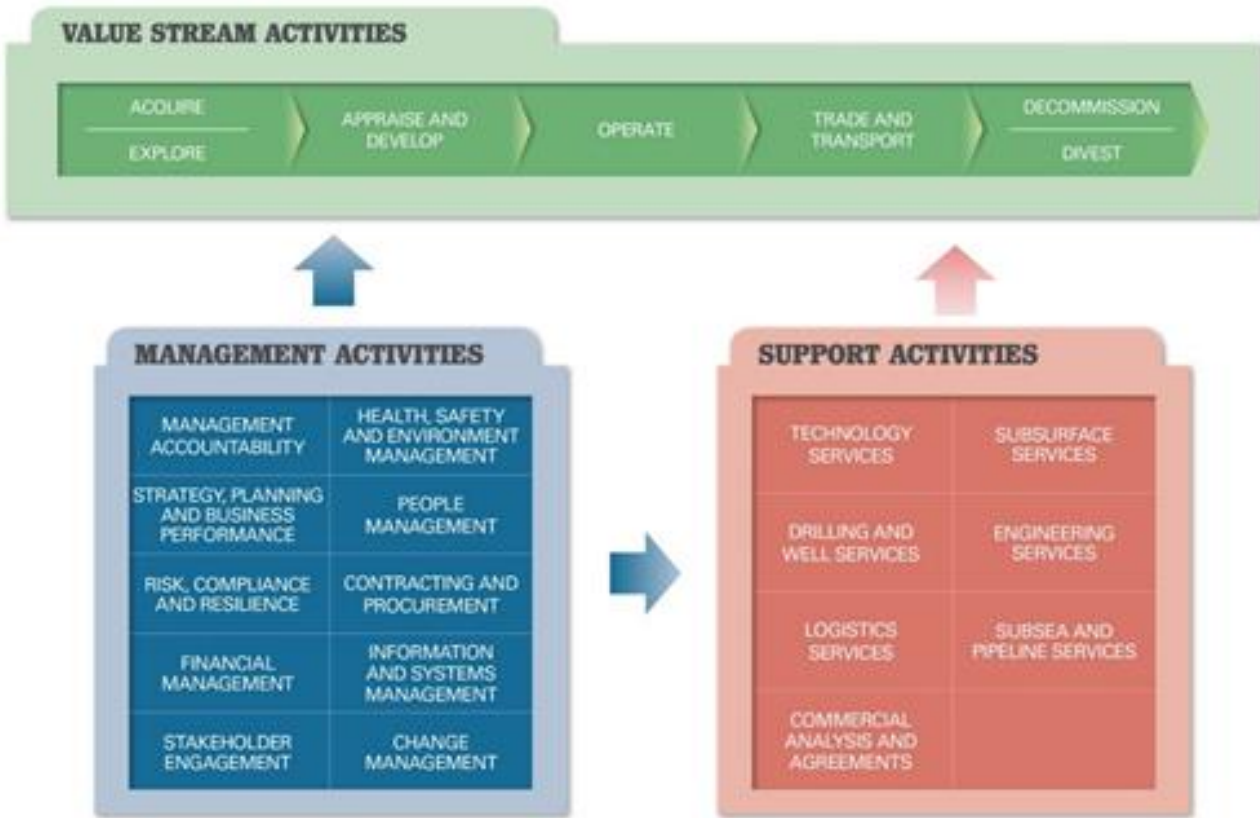


Figure 1-2: The WMS business process hierarchy

### 1.8.5 Environment and Biodiversity Policy

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

### 1.9 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.

#### 1.9.1 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 Section 270 and 572 of the OPGGS Act. While there are no immediate plans for decommissioning (the scope of this EP is for the installation of the trunkline for future operations) all equipment, being installed above the mudline, design allows 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.

The regulatory framework establishes the National Offshore Petroleum Safety and Environment Management Authority as the regulator. The OPGGS Regulations, including the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (the Environment Regulations), ensure that any petroleum activities are carried out in a manner:

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- 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.

### 1.9.1.1 Offshore Project Proposal

Woodside submitted the Scarborough Offshore Project Proposal (OPP) to NOPSEMA for assessment in February 2019 and received acceptance 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 5-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 approved Scarborough OPP is available on the NOPSEMA website: [Scarborough Offshore Project Proposal » NOPSEMA](#).

### 1.9.2 Environmental Protection Act 1986

The Environmental Protection Act 1986 (WA) provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.

In December 2018, Woodside submitted a referral and supplementary report for assessment by EPA in accordance with Part IV (section 38) of the Environment Protection Act 1986 (Assessment no. 2194). EPA decided to assess the project based on the referral information and additional

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information, including a dredging and spoil disposal management plan (DSDMP). The Minister for Environment approved the project under Ministerial Statement No. 1172 on 11 August 2021.

The legislative requirements in the State jurisdiction that are considered relevant to the environmental management of this Petroleum Activities Program are provided in Table 1-3. These are a subset of the DSDMP requirements set out in Condition 6 of MS No 1172, and have been selected in context of the potential for suspended sediments from dredging activities in Commonwealth waters to disperse into State waters.

**Table 1-3: Activity relevant Condition 6 requirements**

Clause	Clause details	Relevant Section of the EP
6-1	The proponent must ensure implementation of the proposal achieves the following Environmental Protection Outcomes:	
6-1(1)	No detectable net reduction of live coral cover at any of the coral impact monitoring locations attributable to the proposal	Section 6.7.2
6-1(2)	Avoid where possible and otherwise minimise direct and indirect impacts on marine fauna listed as specially protected fauna under the <i>Biodiversity Conservation Act 2016</i> .	Section 6.8.7
6-3(1)	A requirement for all dredging and spoil disposal activities to be managed with the objective of achieving the EPOs required by condition 6-1	Noted
6-3(2)	A benthic habitat map showing the extent and distribution of benthic communities and habitats	Section 4.5.2
6-3(3)	Sediment plume modelling outputs to inform predicted impacts and losses of benthic communities and habitats, including a cumulative loss assessment	Section 6.7.2
6-3(4)	Presentation of the sediment plume outputs in an impact zonation scheme	Section 6.7.2
6-3(5)	Management trigger indicators based on pressure response pathways and proposed adaptive management actions	Section 7.10
6-3(6)	Monitoring program including reference and impact monitoring site locations and methods (including timing) to provide data to allow assessment against the management triggers indicators and the EPO required by condition 6-1(1), and to inform adaptive management actions	Section 7.10
6-3(7)	A tiered monitoring/management feedback loop to manage dredging spoil disposal and backfill operations to achieve EPO required by condition 6-1(1)	Section 7.10
6-3(11)	Procedures for determining whether any management trigger exceedances are attributable to the implementation of the proposal	Section 7.10
6-3(12)	Contingency management strategies to be employed if management triggers are reached as a result of the proposal	Section 7.10

### 1.9.3 Sea Dumping Act

In Australia dumping at sea of dredged material is regulated under the Environment Protection (Sea Dumping) Act 1981 (Sea Dumping Act). Under the Sea Dumping Act, the Commonwealth aims to minimise pollution threats by:

- prohibiting, without a permit, ocean dumping of material that is considered to be “seriously harmful” and
- regulating permitted waste disposal.

Permit applications are assessed under a regulatory framework, which encompasses evaluating disposal alternatives and waste minimisation procedures, site and impact assessments and management and monitoring programs. A sea dumping permit (SD2019-3982) for this activity was

granted to Woodside in December 2019. The scope of this sea dumping permit includes the use of spoil ground 5A (an activity proposed in this EP).

#### 1.9.4 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 ecological sustainable development. When a person proposes to take an action that they believe may need approval under the EPBC Act, they must refer the proposal to the Commonwealth Minister for Environment.

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

##### 1.9.4.1 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<sup>1</sup>. Commitments relating to listed threatened species and ecological communities under the Act are included in the Program Report (Commonwealth of Australia, 2014).

##### 1.9.4.2 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 H and the Scarborough OPP. The North-west Marine Parks Network Management Plan (DNP, 2018a) and the South west Marine Parks Network Management Plan (DNP, 2018b) 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):

- 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.

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

- 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 non-extractive 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.

The proposed activity will include works through the Montebello Marine Park Multiple Use Zone. In accordance with the North-west Marine Parks Network Management Plan (DNP, 2018a), petroleum activities including transportation of minerals by pipeline, and oil spill response are permissible subject to approval in Multiple Use Zone (IUCN category VI) and Special Purpose Zone Trawl (IUCN category VI). Proposed mining operations conducted under usage rights that existed immediately before the declaration of a marine park do not require approval.

Petroleum activities (including environmental monitoring in connection with a particular petroleum activity) occurring within these zones are approved by a class approval (DNP, 2018a). Conditions of the Class Approval that are considered relevant to the scope of this EP are provided in Table 1-4.

**Table 1-4: Conditions of Class Approval relevant to the Petroleum Activities Program**

Condition Number	Condition	Relevant Section of the EP
1	The Approved Actions must be conducted in accordance with: (a) an Environment Plan accepted under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009; - (b) the EPBC Act; (c) the EPBC Regulations (d) the North-west Network Management Plan; (e) any prohibitions, restrictions or determinations made under the EPBC Regulations by the Director of National Parks; and (f) all other applicable Commonwealth and state laws (to the extent those laws are capable of operating concurrently with the laws and instruments described in paragraphs (a) to (e)).	Conditions 1a, b, c and f are met by the submitted EP. 1d the impacts on the marine park values have been considered Section 6.7, 0 and 6.9.4 1e Consultation has been undertaken with the Director of National Parks and no prohibitions, restrictions or determinations have been made (Section 5)
2	If requested by the Director of National Parks, an Approved Person must notify the Director prior to conducting Approved Actions within Approved Zones.	Section 7.17 describes requirements to notify the DNP prior to activities within the Montebello Multiple Use Zone.
3	If requested by the Director of National Parks, an Approved Person must provide the Director with information relating to undertaking the Approved Actions (or gathered while undertaking the Approved Actions), that is relevant to the Director's management of the Approved Zones.	If requested by the Director of National Parks, information relating to undertaking the Approved Actions (or gathered while undertaking the Approved Actions), that is relevant to the Director's management of the Approved Zones will be provided.

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Activities will be undertaken in an area adjacent to the Dampier Marine Park, however not within the marine park noting a 250 m buffer is to be maintained. Demonstration that the activities are not inconsistent with the management plans are provided in Section 6.

### 1.9.4.3 World Heritage Areas

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

**Table 1-5: Relevant management principles under Schedule 5 – Australian World Heritage management principles of the EPBC Act**

Number	Principle	Relevant Section of the EP
3	<p><b>Environmental impact assessment and approval</b></p> <p>3.01 This principle applies to the assessment of an action that is likely to have a significant impact on the World Heritage values of a property (whether the action is to occur inside the property or not).</p> <p>3.02 Before the action is taken, the likely impact of the action on the World Heritage values of the property should be assessed under a statutory environmental impact assessment and approval process.</p> <p>3.03 The assessment process should:</p> <p>(a) identify the World Heritage values of the property that are likely to be affected by the action; and</p> <p>(b) examine how the World Heritage values of the property might be affected; and</p> <p>(c) provide for adequate opportunity for public consultation.</p> <p>3.04 An action should not be approved if it would be inconsistent with the protection, conservation, presentation or transmission to future generations of the World Heritage values of the property.</p> <p>3.05 Approval of the action should be subject to conditions that are necessary to ensure protection, conservation, presentation or transmission to future generations of the World Heritage values of the property.</p> <p>3.06 The action should be monitored by the authority responsible for giving the approval (or another appropriate authority) and, if necessary, enforcement action should be taken to ensure compliance with the conditions of the approval.</p>	<p>3.01 and 3.02: Assessment of significant impact on World Heritage values is included in Section 6. Principles are met by the submitted EP.</p> <p>3.03 (a) and (b): World Heritage values are identified in Section 4.8 and considered in the assessment of impacts and risks for the Petroleum Activity in Section 6.</p> <p>3.03 (c): Consultation and feedback received in relation to impacts and risks to the Ningaloo Coast and Shark Bay World Heritage Areas (which are both within the scope of this EP) are outlined in Section 5.</p> <p>3.04, 3.05 and 3.06: Principles are considered to be met by the acceptance of this EP.</p>

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

## 2 ENVIRONMENT PLAN PROCESS

### 2.1 Overview

This section outlines the process 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 management 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. 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.

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, potential impact from planned activities are termed 'impacts', and 'risks' are associated with unplanned events with the potential for impact (should the risk be realised), with such impact termed potential '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 Assessment 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 Scarborough

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, Scarborough 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 Scarborough 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 1.9, 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 OPGGS Regulations.

Impacts and risks of the Scarborough Project were identified in the scoping phase of the Scarborough Project (and presented within the Scarborough 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 Seabed Intervention and Trunkline Installation campaigns.

Using the Scarborough 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).

Magnitude	Receptor Sensitivity			Significance Level
	Low	Medium	High	
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.

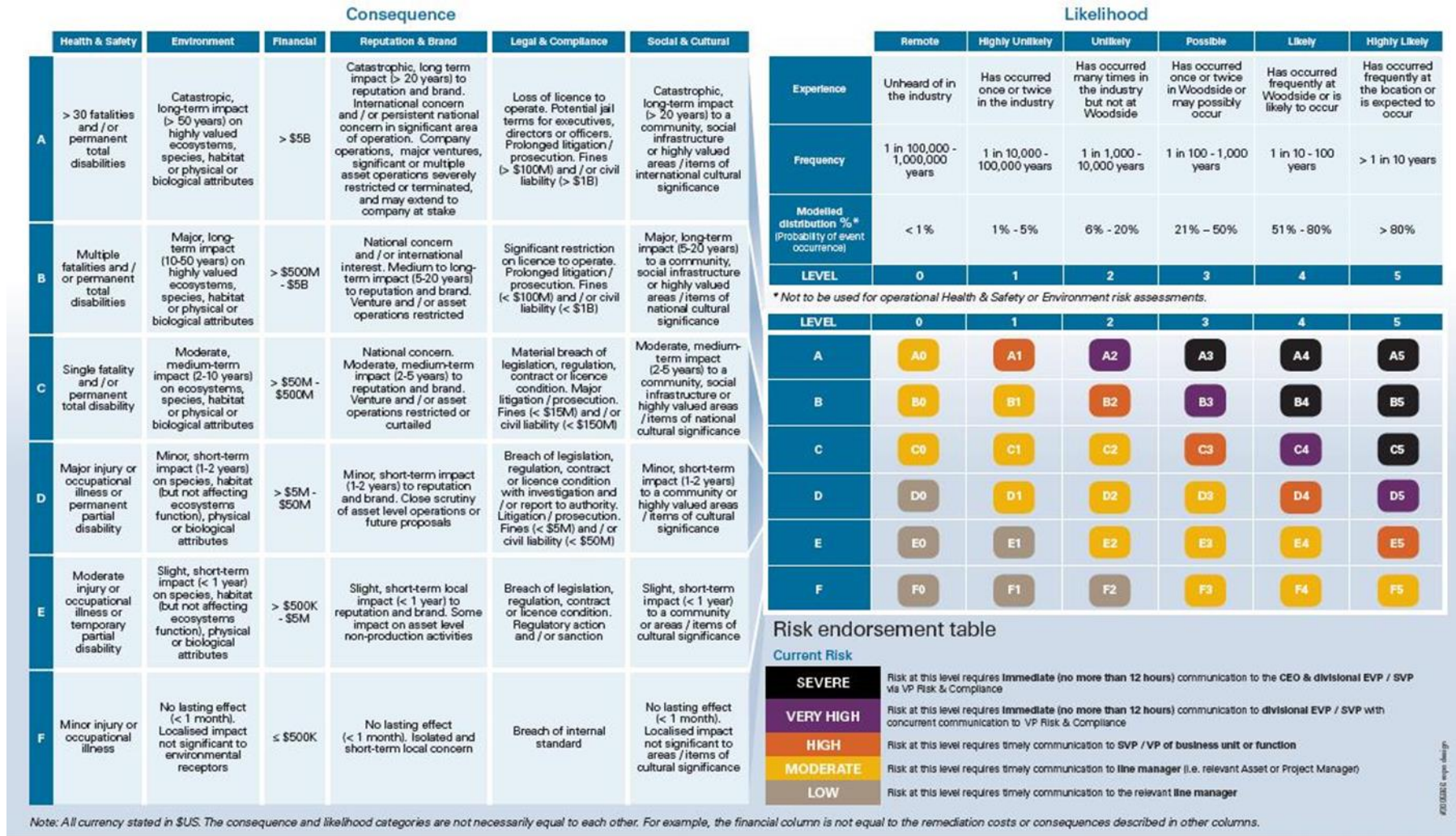


Figure 2-2: Environmental risk levels

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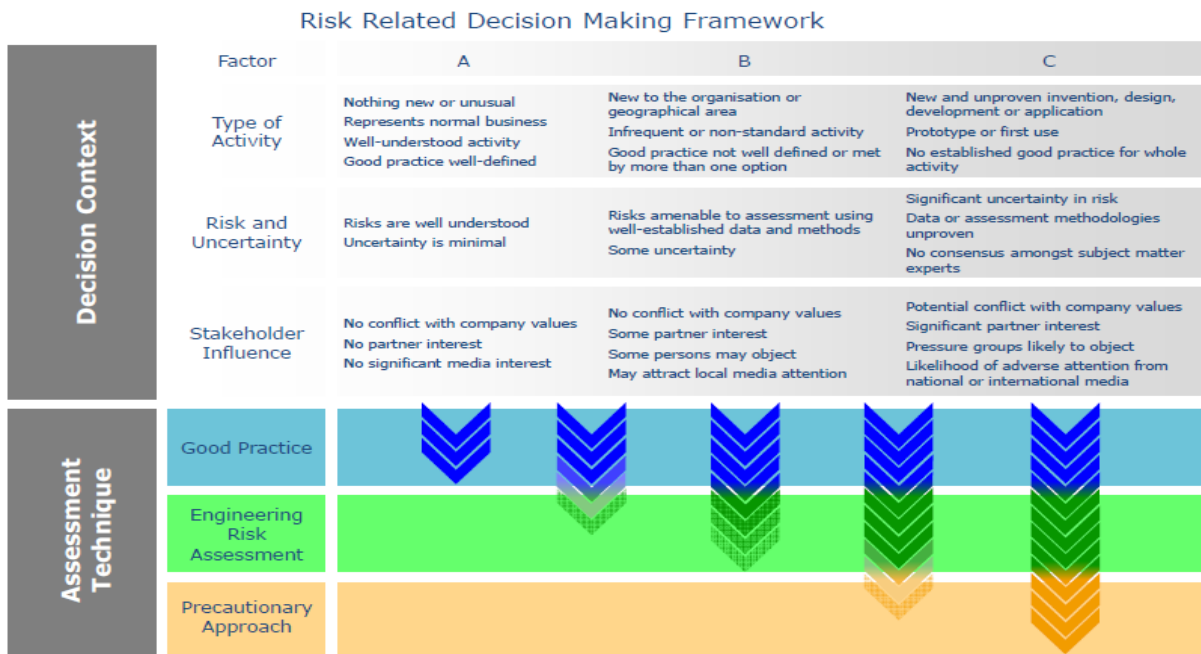
### 2.3.3 Decision Support Framework

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**

<b>Risk</b>	<b>Impact</b>	<b>Decision Type</b>
<i>Low and Moderate</i>	<i>Negligible, Slight, or Minor (D, E or F)</i>	<b>A</b>
Woodside demonstrates these Risks, Impacts and Decision Types are reduced to ALARP if: <ul style="list-style-type: none"> <li>• controls identified meet legislative requirements, industry codes and standards, applicable company requirements and industry guidelines</li> <li>• further effort towards impact/risk reduction (beyond employing opportunistic measures) is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.</li> </ul>		
<i>High, Very High or Severe</i>	<i>Moderate and above (A, B or C)</i>	<b>B and C</b>
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: <ul style="list-style-type: none"> <li>• legislative requirements, applicable company requirements and industry codes and standards are met</li> <li>• societal concerns are accounted for</li> <li>• the alternative control measures are grossly disproportionate to the benefit gained.</li> </ul>		

**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 Scarborough 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 Scarborough 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 Section 3A of 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 the proposed 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 consideration of the environment consequence and stakeholder acceptability
- 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 Scarborough OPP has been met through the following criteria:

- Adoption of relevant Scarborough 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 EP’s**

<b>Risk</b>	<b>Impact</b>	<b>Decision Type</b>
<b>Low and Moderate</b>	<b>Negligible, Slight, or Minor (D, E or F)</b>	<b>A</b>
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.		
<b>High, Very High or Severe</b>	<b>Moderate and above (A, B or C)</b>	<b>B and C</b>
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 four 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

A separate assessment is undertaken to demonstrate that the EP is not inconsistent with any relevant recovery plans or threat abatement plans (refer Section 1.9.4.1). The steps in this process are:

- identify relevant listed threatened species and ecological communities (Section 4.6)
- identify relevant recovery plans and threat abatement plans
- 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 6.9.2)
- for those objectives/action areas applicable to the Petroleum Activities Program, identify the relevant actions of each plan, and evaluate whether impacts and risks resulting from the activity are clearly not inconsistent with that action (Section 6.9.2).

### 2.4.4 Australian Marine Parks

A separate assessment is undertaken to demonstrate that the EP is not inconsistent with the objectives of the relevant Marine Parks Management plan (refer Section 6.9). The steps in this process are:

- identify relevant Marine Parks and the associated Marine Management Plan and their objectives
- identify the Marine Management plan objectives and relevant values of each Marine Park
- for each of the values of the marine park evaluate whether impacts and risks resulting from the activity are clearly not inconsistent the objectives (Section 6.9.2).

## 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 (DotE, 2013) or may be the result of specific agreements or expectations with other relevant persons (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 Scarborough OPP process are required to contain EPOs that are appropriate by being consistent with those set out in the Scarborough 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 Scarborough 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 layout of the trunkline and seabed intervention activities, operational details and additional information relevant to considering environmental risks and impacts.

#### 3.2 Project Overview

Woodside proposes to undertake seabed intervention and trunkline installation activities along the Scarborough trunkline route. The trunkline route is approximately 435 km from the Pluto LNG onshore facility to the pipeline end termination (PLET), of which about 400 km are in Commonwealth waters. This Environment Plan covers the section of the trunkline in Commonwealth waters from the State waters boundary to the PLET. All references to trunkline hereafter refer to this section of the trunkline. Specific locations along the trunkline are referred to as Kilometre Points (KPs) throughout this EP. These references are indicative until final KPs are determined after Trunkline installation.

Seabed intervention activities include surveys, seabed preparation for installation of the trunkline in the form of trenching, excavation and construction of infrastructure crossing rock berms; and post trunkline installation stabilisation activities. These include trench backfill and rock berm construction over the installed trunkline as well as any pre- and post-lay span supports.

Trunkline installation activities include pre and post installation surveys of the trunkline route, trunkline lay over multiple other operator pipelines and fibre optic cables, in-line installation of a 32"/36" reducer and 32" in-line tee near the Pluto Platform, installation of hot tap tees (after continental slope crossing), installation of the PLET and ancillary structures adjacent to the FPU location. Trunkline pre-commissioning activities include dry-commissioning with nitrogen and contingency for flood, clean, gauge and hydrotest (FCGT).

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

**Table 3-1: Petroleum Activities Program Overview**

Item	Description
Permit Area	WA-32-PL
Location	Carnarvon Basin, North-West Australia
Water depth	Approximately 31 m (trunkline route at State waters boundary) to 1400 m (deepest point at KP 275 of the trunkline route)
<b>Seabed Intervention</b>	
Key Vessels	<ul style="list-style-type: none"> <li>• Trailing suction hopper dredge (TSHD)</li> <li>• Offshore construction vessel (OCV)/ deep water excavation</li> <li>• Rock installation vessel (RIV)</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul>

Item	Description
Key activities	<ul style="list-style-type: none"> <li>• Surveys:</li> <li>• Geophysical (including hydrographic surveys)</li> <li>• Geotechnical</li> <li>• Pre-, progress and post construction survey (visual and multibeam echo sounder)</li> <li>• Trenching along the trunkline route and material disposal at existing Spoil Ground 5A</li> <li>• Borrow ground dredging and backfill along the trunkline</li> <li>• Continental slope crossing seabed preparation</li> <li>• Trunkline and infrastructure crossing supports installation, using rock and mattresses</li> <li>• Trunkline pre- and post-lay span rectification</li> <li>• Contingent seabed intervention activities including maintenance dredging/excavation of resettled material in the trench prior to pipelay, post lay dredging, grout bags and rock placement</li> </ul>
<b>Trunkline Installation</b>	
Key Vessels	<ul style="list-style-type: none"> <li>• Pipelay Vessel (PV)</li> <li>• Shallow Water Lay Barge (SWLB)</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel (OCV)</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>
Key activities	<ul style="list-style-type: none"> <li>• Surveys:                             <ul style="list-style-type: none"> <li>– Pre-lay survey of the trunkline route prior to commencement of pipelay (visual &amp; multibeam echo sounder)</li> <li>– Post-lay as-built survey of the completed trunkline (visual and multibeam echo sounder)</li> </ul> </li> <li>• Installation of the trunkline by a SWLB in the shallow water section of the route where the DP PV may not be able to access due to water depth restrictions.</li> <li>• Setting of SWLB anchors with anchor handling vessel/tug.</li> <li>• Installation of the trunkline by the PV including over other resource operator pipelines.</li> <li>• Installation of PLET and in-line tee assembly, hot tap tee assembly and ancillary structures as required through design by the PV.</li> <li>• Continuous delivery of pipe to the SWLB and PV by pipe supply vessels.</li> <li>• Installation of the foundations for the PLET structure by a construction vessel prior to the installation of the PLET.</li> <li>• Dry pre-commissioning of the trunkline by a construction vessel.</li> <li>• Contingent activities including wet buckle recovery and FCGT.</li> </ul>

### 3.3 Concordance with the 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 from the time the Scarborough OPP was authored.

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
4.4.2.4 Trunkline	In the Scarborough OPP it is proposed that gas from the Scarborough fields will be exported from the FPU via a 32-inch carbon steel trunkline.	As trunkline engineering has progressed post Scarborough OPP acceptance, optimisation has resulted in a dual diameter design. This EP describes and assesses installation of a Trunkline with nominal 36" diameter from state waters boundary to approximately KP200 (offshore, approx. 194m water depth, before the Continental Slope crossing). From KP 200 to the FPU (approx. KP 433) the Trunkline remains nominal 32" diameter.	Yes	No	No	<p>This change does not significantly alter the overall environmental impacts and risks of the project as described in the accepted Scarborough OPP.</p> <p>The dual diameter Trunkline increases contingent hydrotest (FCGT) discharge volumes however risk assessment shows no significant change in environmental impact potential (Section 6.7.8).</p> <p>There is no increase in seabed disturbance from the larger diameter due to the relatively small absolute change (i.e., 2" increase in nominal diameter of Trunkline) (Section 6.7.3)</p> <p>There are no changes required to the emission estimates provided in the OPP (Section 7.1.3.2) as a result of the proposed change to the trunkline diameter.</p>
4.4.8 Pre-commissioning and Commissioning	While dry pre-commissioning is the base case for Trunkline pre-commissioning, the Scarborough OPP described and assessed the risks and impacts associated with hydrotest (FCGT). Potential volume of pre-commissioning discharges were estimated as 190,000 m <sup>3</sup> of chemically treated seawater with a 20% contingency, resulting in a	<p>Planning and design of the contingent FCGT activity has progressed since Scarborough OPP development and the FCGT pre-commissioning activity could occur as:</p> <ul style="list-style-type: none"> <li>Approx. 255,000 m<sup>3</sup> discharge of Trunkline fluids at PLET. Discharge occurs twice,</li> </ul>	Yes	No	No	<p>This change does not significantly alter the overall environmental impacts and risks of the project as described in the accepted Scarborough OPP.</p> <p>Impact assessment carried out (Section 6.7.8) shows the highest impact significance level remains as Slight (E) with no new receptors outside of the EMBA.</p>

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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
	<p>maximum likely volume of 223,000 m<sup>3</sup>. Assumptions were made when modelling the discharge, such as a discharge rate of approx. 1500m<sup>3</sup>/hr. The location and timing of the pre-commissioning fluid discharge was unknown; however, was assumed to be discharged from a single point on the seabed in the vicinity of the proposed location of the FPU at any time of the year.</p>	<p>due to the need to pre-flood the Trunkline to manage pig speed and air ingress risks (maximum total discharge of wet pre-commissioning fluids at PLET location approx. 510,000 m<sup>3</sup>).</p> <p>Wet pre-commissioning discharges will be separated by at least 72 hrs (between discharge of the pre-flood / FCGT fluids) such that water quality returns to 99% species protection level, as supported by hydrotest discharge modelling, and as such there is no cumulative impact potential for benthic receptors.</p>				
4.4.7.3 Trunkline Stabilisation – continental slope crossing	<p>Displaced material from continental slope preparation could be placed in the vicinity of the pipeline route (within a radius of approximately 250 m) and/or relocated along the pipeline corridor.</p>	<p>Method selection of the continental slope crossing preparation activity has progressed since Scarborough OPP.</p> <p>Excavated material from continental slope preparation is planned to be placed in areas adjacent to the pipeline route 100 m to 500 m from the trunkline centreline either side. In the case of free vessel navigation (a potential method of preparation), material placement location</p>	Yes	No	No	<p>This change does not significantly alter the overall environmental impacts and risks of the project as described in the accepted Scarborough OPP.</p> <p>The overall impact significance level for disturbance to benthic habitat from trunkline installation and associated activities is Minor (D) based on a minor impact to the most sensitive receptors (marine fauna, AMPs and KEFs) (Section 6.7.3). The impact significance levels for individual receptors are consistent with the</p>

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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
		may be up to 1 km from the trench centre line.				levels rated in the Scarborough OPP.
Throughout	Different dates are proposed throughout the OPP for various project phases. For example Section 4.4.2.4 describes Trunkline construction as anticipated to begin in 2022.	Project timing (as detailed in Section 3.6 of this EP) has changed, for example Trunkline installation in Commonwealth Waters may commence Q4 2023. This is due to the 2020 delay in project progress.	No	Yes	No	<p>This change does not significantly alter the overall environmental impacts and risks of the project as described in the accepted Scarborough OPP.</p> <p>This EP assesses risks across the year, to accommodate changes in timing and ensure risks are managed to ALARP and acceptable levels whenever the activities may be carried out.</p>



### 3.4 Location

The Petroleum Activities Program is located in Commonwealth waters. Figure 3-1 shows the trunkline route, Spoil Ground 5A and the Offshore Borrow Ground.

Option selection for the trunkline route is described in Section 4.5.4.5 of the Scarborough OPP (SA0006AF0000002, Rev 5). The trunkline will run from the Pluto LNG onshore facility (Pluto Train 2) to the FPU at the Scarborough field. Within Commonwealth waters, the trunkline will extend from the existing Pluto offshore infrastructure to the FPU at KP 435. From Mermaid Sound to about KP 160, about 20 km south east of the platform, the trunkline will be routed adjacent to the existing Pluto trunkline. At KP 200, about 20 km north-west of the Pluto Riser Platform, the trunkline deviates to the south to avoid the existing facilities and manage environment, technical and safety risks.

The Offshore Borrow Ground within Commonwealth waters is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed trunkline route and is adjacent to the Dampier Marine Park, although offset by a minimum of 250 m from the park boundaries.

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

Site/Location	Kilometre Point (KP)	Water depth (approx. m)	Coordinates (GDA 94 MGA Zone 50)		Associated Title
			Eastings	Northings	
Proposed trunkline route	32 (State waters boundary)	39.3	468970	7749701	WA-32-PL
	50	44	452864	7756347	
	100	56	404648	7768982	
	150	74	356299	7779977	
	200	193	314711	7794938	
	250	1352	270981	7812935	
	300	1337	224872	7811768	
	350	1114	183660	7785046	
	400	1028	135524	7795563	
	433 (PLET)	941	105629	7793941	
Borrow Ground	NA	35	486549	7755564	Petroleum Access Authority to be granted by NOPTA upon EP acceptance (application no. 5TTMMH)
		37	485680	7756145	
		38	483677	7756140	
		39	485670	7757795	
		39	486769	7757810	
		39	489553	7758355	
		35	491221	7757228	
		35	492892	7756109	
Spoil Ground 5A	N/A	31	467790	7749597	WA-32-PL
		39	465702	7751758	
		37	464779	7752425	
		37	463738	7752873	

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Site/Location	Kilometre Point (KP)	Water depth (approx. m)	Coordinates (GDA 94 MGA Zone 50)		Associated Title
			Eastings	Northings	
		44	452362	7755535	
		44	452294	7755243	
		38	463301	7752667	
		37	463604	7752596	
		37	463670	7752581	
		36	464629	7752166	
		39	465505	7751567	
		37	466550	7750486	
		36	467508	7749494	

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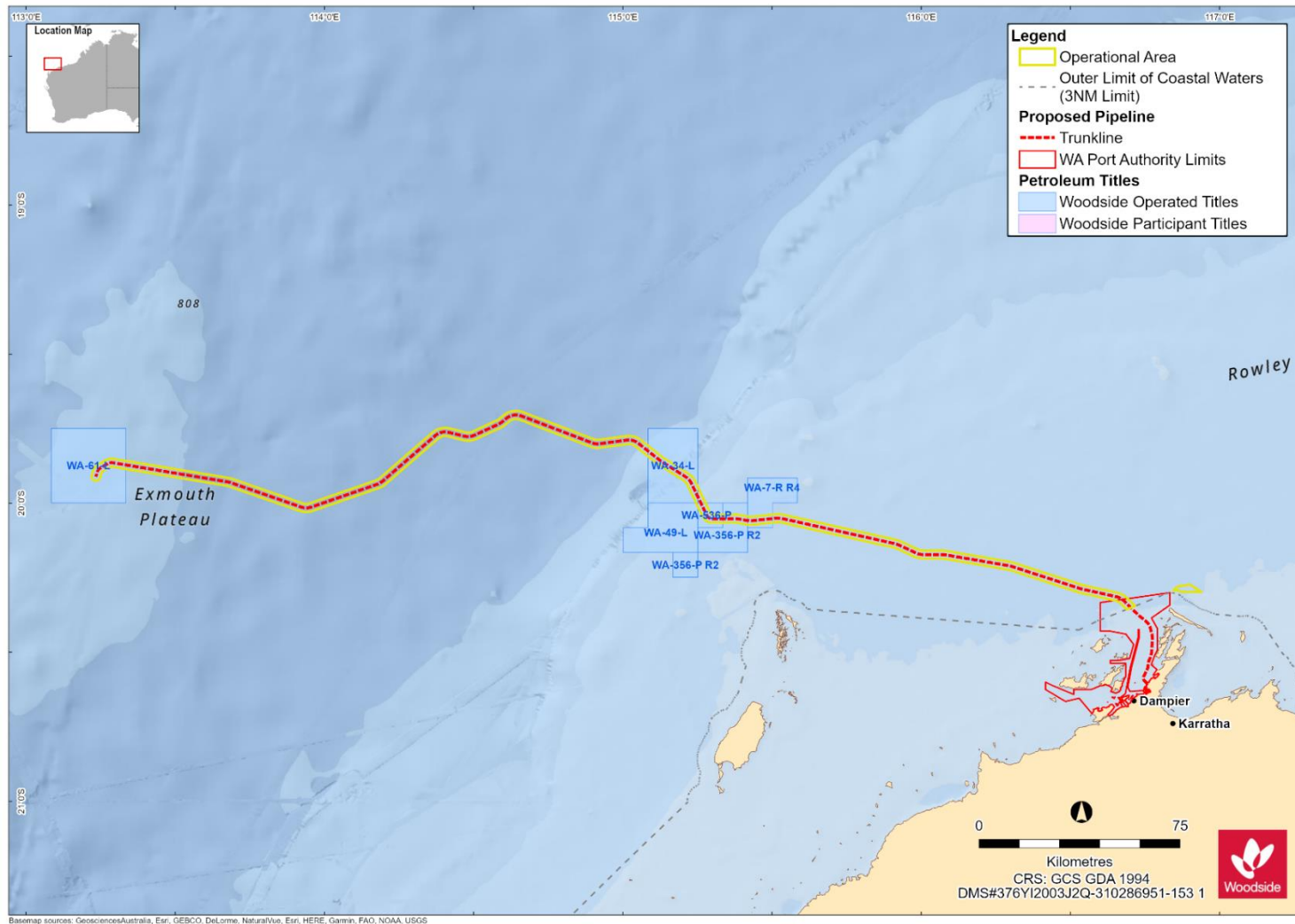


Figure 3-1: Location of the Petroleum Activities Program

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### 3.5 Operational Area

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

For the purposes of this EP, the Operational Area includes the following Project Areas:

- 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 which allows for the movement and positioning of vessels and includes Spoil Ground 5A.
- Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.

This EP refers to the above areas as ‘Trunkline Project Area’ and ‘Offshore Borrow Ground Project Area’. Where the assessment in this EP relates to both these areas, collectively they are referred to as ‘Operational Area’. The Operational Area is shown in Figure 3-1.

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. This EP applies to activities undertaken within the Operational Area, as described in this section.

### 3.6 Timing

Subject to relevant approvals and other constraints such as vessel availability and weather, subsea intervention activities are expected to start in Q4 2023. Trunkline installation activities in Commonwealth waters are expected to commence Q4 2023 following successful completion of the State waters installation scope. The Petroleum Activities Program is estimated to be completed in 24 months with activities occurring in multiple campaigns.

Table 3-4 provides a breakdown of the estimated duration of planned seabed intervention and trunkline installation activities. The EP has 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. The petroleum activities are sequential, for example, completion of pre-lay seabed intervention is required before trunkline installation. Concurrent operations (vessels in the same area at the same time) may occur and are detailed in Section 6.2.1 including potential current operations with the Scarborough D&C activities.

Timing, duration and vessel selection for all activities is subject to change due to project schedule requirements, vessel availability, unforeseen circumstances, and weather. Therefore, while the activities and estimated start date(s) / duration(s) are described in Table 3-4, activities may occur at any time over the life of the 5-year EP (until the end of 2027).

**Table 3-4: Summary of Petroleum Activities Program timing**

Activity	Earliest start & Estimated duration <sup>1</sup>	Vessel (typical) <sup>2</sup>
<b>Pre-lay Seabed Intervention</b>		
Continental slope crossing seabed preparation	Q4 2023- 1 month	BOKA Falcon (OCV)
Pipeline and infrastructure crossing supports installation	Q4 2023 – 1-2 months	FPV Seahorse (RIV)
Pre-lay span rectifications (rock and/or mattress)	Q4 2023- 1 week	FPV Seahorse
Pre-lay trenching and spoil disposal	Q4 2023 - 2 months	TSHD Gateway
<b>Trunkline Installation</b>		

Activity	Earliest start & Estimated duration <sup>1</sup>	Vessel (typical) <sup>2</sup>
Pre-lay survey of the trunkline route	Q4 2023 – 1 month	Survey vessel
Trunkline installation including in-line tee and PLET	Q4 2023 – 1 month Q4 2023 – 6 months Q1 2024 – 1 month	Saipem Endeavour (SWLB) Saipem Castorone (PV) Construction vessel for PLET foundation installation.
Dry pre-commissioning / wet pre-commissioning	Q2 2024 – 1- 3 month(s)	Construction vessel
Post-lay survey of the installed trunkline	Q2 2024 – 1 month	Survey vessel
<b>Post-lay Seabed Intervention (incl. all progress surveys)</b>		
Borrow ground dredging and backfill	Q4 2023 – 2-3 months	TSHD Gateway
Post-lay installation of rock for stabilisation and/or span rectification	Q1 2024 – 2-3 months	FPV Seahorse
<b>Non-Production phase</b>		
Trunkline preservation (IMMR)	2024 - 2026	Dependent on activity (Survey vessel, construction vessel)

<sup>1</sup> Does not account for operational delays and is an estimate of timeframes required for the activity

<sup>2</sup> Indicative vessels only, may be subject to change based on availability

### 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 3-1.

Vessels may mobilise from an Australian port or directly from international waters to the Operational Area, in accordance with biosecurity and marine assurance requirements. Vessels will not usually anchor within the Operational Area during the activities and instead maintain position using 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*. The vessels will be lit to maintain operational safety on a 24-hour basis.

### 3.8 Support Operations

#### 3.8.1 Refuelling

Vessels will be refuelled via support vessels as required and with a dedicated bunker vessel for the PV given its size. Refuelling may take place within the Operational Area and has been included in the risk assessment for this EP. For the SWLB and PV refuelling will take place within the Operational Area during continuous trunkline installation. Other fuel transfers that may occur on board vessels may include refuelling of cranes or other equipment as required.

### 3.8.2 Helicopter Operations

Helicopter activities are not planned for the Seabed Intervention scope, however there may be situations where crew changes may be performed using helicopters where vessels have a helideck. Helicopter operations within the Operational Area are limited to helicopter take-off and landing on the helideck.

For the trunkline installation scope helicopters will be used to transfer crew to and from the SWLB, PV and construction vessel on a regular basis, potentially up to six days per week. For vessel locations further along the trunkline route (i.e. past the nominal location of Pluto platform) the helicopters will be refuelled on the helideck. As such this activity will take place within the Operational Area and has been included in the risk assessment for this EP.

### 3.8.3 ROV Operations

The vessels may be equipped with a ROV system that is maintained and operated by specialised personnel aboard the vessel. ROVs may be used during activities including:

- Visual observations at seabed during activities (e.g., rock berm installation and continental slope preparation) and monitoring of the touchdown point of the trunkline on the seabed during trunkline installation.
- Pre and post lay surveys using an ROV, which can be fitted with various tools and camera systems.

### 3.8.4 Underwater Acoustic Positioning

Accurate positioning of mattresses, rock berms, the Trunkline and other structures on the seabed is required and therefore Ultra Short Baseline (USBL) and/or Long Base line (LBL) acoustic positioning may be required in some instances.

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

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

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. When required for general positioning they will emit one chirp every five seconds (estimated to be required for 4 hours at a time). When required for precise positioning they will emit one chirp every second (estimated to be required for 2 hours at a time).

## 3.9 Seabed Intervention Activities

### 3.9.1 Surveys

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

- bathymetry
- debris/obstacles
- pipeline and infrastructure (fibre optic cables etc.) crossings
- spoil ground and borrow ground conditions

- trunkline position.

The survey activities are undertaken either from a dedicated survey vessel or from the construction vessels themselves (RIV using its ROV for example).

The survey methods may include multibeam echo sounders (MBES), side scan sonar (SSS), pipe trackers, magneto meter and sub bottom profiler (SBP), and may utilise LBL or USBL for positioning. The survey methods used will be dependent on seabed soil conditions and required penetration and resolution. Some of the systems act as the transmitter and receiver; others have a separate transmitter and a short hydrophone streamer as a receiver.

MBES is used to undertake hydrographic surveys prior to, during and post trenching, material disposal and offshore borrow ground dredging activities. The purpose of the surveys is to establish seabed levels of the dredging areas, monitoring progress during dredging, material disposal and backfill.

MBES, like other sonar systems, transmit sound energy and analyse the return signal (echo) from the seafloor or other objects. The sound waves are transmitted from a transducer mounted on the hull of the survey vessel to produce a fan-shaped coverage of the seafloor. The coverage area on the seafloor depends on the equipment used, the settings of the equipment and the depth of the water.

SSS, pipe trackers and magneto meters may be used to verify positions of existing seabed features and infrastructure such as fibre optic cables, pipelines, umbilicals or seabed/subsurface obstacles.

Additional small-scale geotechnical surveys may be undertaken to support seabed preparation activities. Geotechnical surveys typically involve in-situ testing and piston/push sampling. Following sampling, all equipment is withdrawn from the seabed. A small hole (<1 m<sup>2</sup>) will remain, which will eventually collapse and infill with the movement of surface sediments in ocean current.

### 3.9.2 Vessel Operations

#### 3.9.2.1 Trailing suction hopper dredge (TSHD)

Trenching, material disposal and sand backfill activities associated with the Petroleum Activities Program will be undertaken by trailing suction hopper dredge (TSHD). TSHDs are a self-propelled ship with a holding facility ('hopper') and are generally equipped with one or two suction pipes connected to drag head(s). The TSHD includes an overflow to discharge the redundant water overboard.

Typical TSHD vessel parameters are presented in Table 3-5.

**Table 3-5: Typical TSHD vessel parameters**

Parameter	Description – Example TSHD Gateway
Draft	10 m
Length	143.5 m
Carrying capacity	12,000 m <sup>3</sup>
Total fuel volume	1590 m <sup>3</sup>
Volume of largest fuel tank	287 m <sup>3</sup>
Drag heads / suction pipes	Single

#### 3.9.2.2 Rock Installation Vessel (RIV)

Installation of rock berms (Section 3.9.6.1) associated with the Petroleum Activities Program will use a dynamically positioned rock installation vessel. These vessels have the major equipment and systems of:

- flexible fall pipe and fall pipe ROV assisting with highly accurate rock placement (low rock wastage)
- fall pipe ROV with full video and multibeam echosounder capability
- large rock carrying capacity to ensure limited transfers to restock
- fully integrated production data monitoring systems ensuring efficient execution
- DP2 dynamic positioning station keeping capability and redundancy.

Typical RIV parameters are presented in Table 3-6.

**Table 3-6: Typical rock installation vessel parameters**

Parameter	Description - Example FPV Seahorse
Draft (max)	8 m
Length	162 m
Carrying capacity	17,500 t
Total fuel volume	3161 m <sup>3</sup>
Volume of largest fuel tank	1270 m <sup>3</sup>

### 3.9.2.3 Offshore Construction Vessels (OCVs)

Continental slope crossing seabed preparation (Section 3.9.5), span rectification (Section 3.10) and concrete mattress placement (Section 3.9.6.2) will be performed by a construction vessel under seabed intervention scope. Construction vessels will use DP and have a large heave compensated crane, work class ROVs and large flat back deck space to perform the works.

Typical construction vessel parameters are presented in Table 3-7.

**Table 3-7: Typical construction vessel parameters**

Parameter	Description – Example BOKA Falcon
Draft (max)	7.8 m
Length	93.4 m
Gross tonnage	6776 t
Crane capacity (AHC)	150 t @ 12 m
Total fuel volume	1,339 m <sup>3</sup>
Volume of largest fuel tank	461 m <sup>3</sup>

### 3.9.2.4 Support and other vessels

Other vessels used for the Seabed Intervention Activities include survey vessels, 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 (e.g., Dampier, Onslow). The loading and back-loading of equipment, materials and wastes is one of the most common supporting activities conducted. Loading and back-loading is undertaken using cranes on the vessels to lift materials in appropriate offshore rated containers (e.g., ISO tanks, skip bins, containers) between the activity vessel and support vessel. The support vessels, when in the Operational Area, are also available to assist in implementation of the Oil Pollution First Strike Plan, should an environmental incident occur (e.g., spills).



### 3.9.3 Trunkline Trenching (Dredging and Material Disposal)

It is anticipated that for the section of trunkline from shore to ~KP 50 in Commonwealth waters, there may be a requirement for some trenching (pre-lay) and back fill (post-lay) to stabilise the trunkline in both State and Commonwealth waters.

The pre-lay trenching works associated with the trunkline installation involves the dredging of an approximately 2–3.5 m deep trench, with an average width of approximately 30 m along the trunkline route, for up to ~18 km into Commonwealth waters, with detailed engineering being undertaken to minimise these intervention works as far as practicable. Trenching out to KP50 is considered a contingency only that has been impact and risk assessed under the EP. The planned trenching is only proposed to occur out to ~KP 39. Up to approximately 0.8 Mm<sup>3</sup> of sediment will be required to be trenched in Commonwealth waters (in the case of trenching from KP 32 to KP 50) and approximately 0.4 Mm<sup>3</sup> for the planned trenching, which has been reduced to KP 39.

A TSHD has been proposed for the pre-lay trenching works in Commonwealth waters. TSHDs are a self-propelled ship with a holding facility ('hopper') and are generally equipped with one or two suction pipes connected to drag head(s). Once near the trenching area the TSHD will be positioned along the centreline of the trench. The TSHD will then lower its trailing pipe and attached drag head to the seabed. The TSHD will sail slowly forward (typically 1-1.5 m/s) while dragging the drag head along the seabed. A jet system is typically used to assist with fluidising the seabed material whilst the drag head teeth provide some cutting/loosening influence. The dredge pumps hydraulically lift the mixture of solids and water up the suction pipe and into the hopper.

The loading of the TSHD will be optimised using overflow. Overflow is the release of predominantly water with some fine sediment and is used to maximise the quantity of sediment within the hopper and as such dredged material within each load. Overflowing generally starts once the sediment mixture reaches the top of the overflow weir in the hopper and would typically continue until the hopper is loaded to the dredging mark. Overflow will be discharged at the keel level rather than above water to reduce turbidity and dispersal of fine sediments.

The TSHD will place the dredged material in an approved spoil ground area in accordance with an approved Sea Dumping Permit (SD2019-3982). Spoil Ground 5A is the nominated spoil ground in Commonwealth waters, which lies within the Trunkline Project Area. Spoil Ground 5A is approximately 300 m wide and runs for about 18 km between the State waters boundary and a maximum of KP 50. Spoil Ground 5A has previously been used for spoil disposal from the Pluto Foundation trunkline. A total volume of up to approximately 0.8 Mm<sup>3</sup> trenched material may be disposed of within Spoil Ground 5A.

### 3.9.4 Offshore Borrow Ground Dredging and Backfill

After the installation of the trunkline in the trench, backfilling with dredged material is required to help stabilise the trunkline. Up to ~2 Mm<sup>3</sup> of this material will be sourced from the Offshore Borrow Ground, within Commonwealth waters for placement in both Commonwealth and State waters.

Up to approximately 0.9 Mm<sup>3</sup> (in the case of backfill from KP 32 to KP 50) and approximately 0.4 Mm<sup>3</sup> (for planned backfill from KP 32 to KP 39) of sandy sediments with a low proportion of fines will be required to help stabilise the trunkline in Commonwealth waters. Backfill material will be dredged using a TSHD in the same method presented in Section 3.9.3. Dredging within the Offshore Borrow Ground area (~17 km<sup>2</sup>) is planned to target areas with coarse sand where the sand thickness is largest. Dredging progress will be regularly surveyed with the aim to remove a layer thickness of less than approximately one metre (subject to technical constraints).

Backfill material obtained from the Offshore Borrow Ground will be placed over the trunkline via a drag head. The TSHD will reverse pump the sand backfill material from its hopper into the trench through a suction pipe, such that material is released close to the seabed. When backfilling the trunkline some trench overflow may be required to ensure the specifications for stabilisation are met.

Offshore Borrow Ground is the only borrow ground considered within Commonwealth waters (Figure 3-1) and is considered within the Petroleum Activities Program and the scope of this EP. Operations within this borrow ground will have a 250 m buffer from the boundary of the Dampier Marine Park.

### 3.9.5 Continental Slope Crossing Seabed Preparation

The trunkline along the continental slope requires seabed preparation to prevent excessive bending movements in the trunkline and associated free span lengths, where excavation will take place in water depths ranging between 550 m and 650 m. At about KP 209, seabed material, over a length of approximately 150 m within a 300 m corridor (excluding placement), will be excavated and/or displaced, which will allow appropriate pipeline span lengths.

The volume for excavation is dependent on trench depth and side slope angles. The design of the trench is significantly influenced by geotechnical properties and long-term stability requirements. The excavation volume is indicated as between 5000 and 15,000 m<sup>3</sup>.

The primary method of excavation is planned to be undertaken using an ROV controlled large volume grab. This system will be deployed from the construction vessel with an active heave compensated crane and lowered to the seabed. Several options for lateral movement of the excavated material are considered:

- use of a winch connected to a clump weight, offset from pipeline centreline
- use of a connected hose system to the grab, allowing a pump inside the grab to pump the mixture through the hose to a point above the bucket or to a designated placement area
- by vessel navigation moving the construction vessel between excavated area and adjacent material placement location for each grab cycle.

Selection of the most suitable, or combination of method(s) is subject to detailed engineering in context of the local soils and confirmation of a stable permanent side slope angle. Given the low strength of the local soil the creation of overburden on the top of the side slope is reviewed in significant detail. Typically, the seabed footprint for the disposal of excavated material is 100 m to 500 m from the trunkline centreline either side. In case of the free navigation of the construction vessel the choice of material placement location may be up to 1 km from the trench centre line.

Secondary options to achieve the excavation profile are methods such as: mass flow excavation, conventional ROV tooling and/or jetting to create the required trench. All the proposed methods will involve a level of fluidisation of the already very soft soils in the trench profile. This is unavoidable given the soil properties. A portion of the material excavated will end up dispersed in the water column with particles settling out away from the excavated area as a result of current and gravity, typically moving material down gradient.

### 3.9.6 Pipeline and Infrastructure Crossing Supports

The trunkline route crosses existing subsea infrastructure including pipelines, flexible flowlines, umbilicals and fibre optic cables, which will require this installation crossing supports on top of the existing seabed (Table 3-8). The design and specifications of the crossing supports are specific to each crossing. The options for possible crossing supports include rock berms (Section 3.9.6.1) and concrete mattresses (Section 3.9.6.2). Three infrastructure crossings lie within the Montebello Marine Park Multiple Use Zone (MUZ), with one crossing on the border (Figure 3-2).

**Table 3-8: Commonwealth waters subsea infrastructure crossings**

Crossing	KP	Water depth (m)	Method
Reindeer Pipeline (Santos)	75	~ 51 m	Rock
Fibre Optic Cable 1 (Telstra)	136	~71 m	Rock
Fibre Optic Cable 2 (Telstra)	150	~ 75 m	Rock

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Crossing	KP	Water depth (m)	Method
Wheatstone Pipeline (Chevron)	190	~ 121 m	Rock
Julimar Brunello Pipeline	192	~ 135 m	Rock
Pluto Pipeline	194	~ 150 m	Rock
Pyxis Pipeline	212	~1005 m	Mattresses

### 3.9.6.1 Rock Berms

Crossing supports may use rock berms upon which the trunkline is subsequently installed, to clear the existing infrastructure. The rock berms at the beginning and end of each crossing will contain rock cover over the top of trunkline to avoid future erosion of the touch down point of the trunkline. The rocks will be placed on the seabed in a controlled manner using a dynamically positioned RIV.

Two fibre optic cables are crossed needing a single rock approximately 0.7 m high rock pad on each side of the existing cable. The Wheatstone trunkline is the largest diameter to cross with two pre-lay berms on either side to reach the required safe separation height. Multiple small berms are needed to span over the four lines comprising the Julimar and Pluto systems.

A test dump may be carried out prior to crossing support installation, to ensure rock placement equipment configuration. This would be carried out within the Trunkline Project Area in a location free from existing infrastructure and not within the direct line of the trunkline route.

The direct disturbance footprint will be determined by the length, number and height of the rock berms. Seabed disturbance associated with the rock berms will typically be within the 30 m average disturbance corridor for the trunkline installation activities, however some settling of material may occur wider than 30 m and the corridor may extend slightly further for the centre of the berm.

Pre-lay supports to control acceptable trunkline spanning require the design to consider maximum allowable span lengths, working out whether one or multiple supports are required. Seabed bathymetry is a key input to assess to most appropriate locations for the supports. Where the span height is minimal, concrete mattresses may be used (Section 3.9.6.2).

A dynamically positioned RIV will be used to install the rock on the seabed. The fall pipe consists of multiple pipe sections, allowing it to be adjusted for water depth. The rock is transported from the hoppers along conveyor belts to the fall pipe and a feeder is used to control the installation rate. The fall pipe guides the material to the seabed and an ROV located at the base of the fall pipe allows for positioning.

Rock may be sourced locally and/or internationally.

### 3.9.6.2 Concrete Mattresses

Some crossing and span supports may consist of concrete mattresses, likely in areas of soft sediments. The Pyxis crossing supports will consist of concrete mattresses, as the seabed is in an area of soft sediments. Concrete mattress will be installed in close proximity on either side of the existing subsea infrastructure. The concrete mattresses are approximately 8 m x 3 m. To ensure the correct height is achieved, the design allows for a layering of multiple mattresses to create sufficient bearing capacity. The concrete mattresses will be installed from a DP construction vessel. The vessel's crane will be used to lift the concrete mattress from the deck of the vessel and then lowered to the seabed. An ROV will be used during installation to assist in accurate placement and positioning on the seabed.

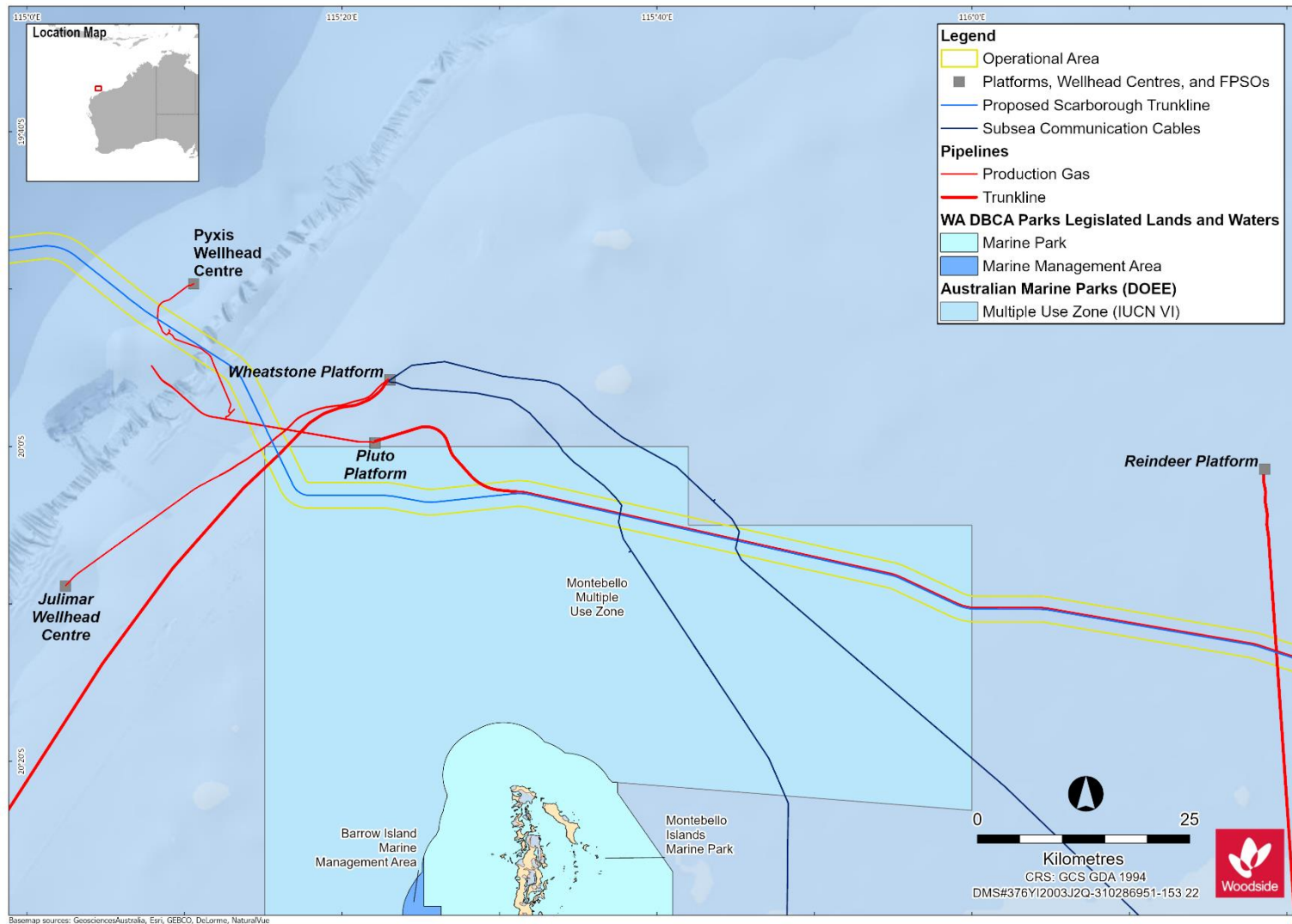


Figure 3-2: Pipeline and infrastructure crossings requiring protection

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### 3.10 Span Rectification

The trunkline route has been engineered to reduce the requirement for span rectification. Currently, it is anticipated that only one location will require pre-lay span correction; however, further design and the pre-lay survey will confirm the final number of pre-lay span corrections required. Following installation of the trunkline, additional locations requiring span rectification may be identified.

The options for possible span correction (pre and post lay) and scour mitigation include concrete mattresses (typically 6 or 8 m x 3 m) (Section 3.9.6.2), grout bags (typically 200 kg to 2000 kg) (Section 3.10.1), rock installation (Section 3.9.6.1), seabed levelling and excavation (e.g. dredging using TSHD, mass flow excavators and jetting) (Section 3.13.7).

#### 3.10.1 Grout Bags

Grout bags are typically used to correct spans after trunkline installation. This process typically involves placing grout bags under the span section. The empty bag is moved into position using ROV, then filled with grout supplied from a mixing and pumping spread on the construction 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 kg to 2000 kg per span.

### 3.11 Trunkline Installation Activities

#### 3.11.1 Surveys

Survey activities may be carried out prior to the commencement of trunkline installation (pre-lay), during scope execution (touchdown monitoring) and after trunkline installation has occurred (post-lay). Surveys may collect data to gather information on:

- bathymetry
- debris/obstacles
- pipeline and infrastructure (fibre optic cables etc.) crossings that the trunkline will be installed over
- the finished trunkline position.

The survey activities are undertaken either from a dedicated survey vessel or from installation vessels themselves, using the ROV stationed onboard these vessels.

A pre-lay survey of the trunkline will be undertaken prior to commencement of installation. This survey is aimed at identifying debris and other hazards prior to laying the trunkline and is not considered a full geophysical/geotechnical survey.

The survey usually utilises a SSS fish towed behind the pre-lay survey vessel. The survey methods are non-intrusive and the equipment, under planned operation, will not disturb the seabed. Information is transferred to the survey vessel via an umbilical. The pre-lay survey may also be undertaken with ROV or Autonomous Underwater Vehicle (AUV) using SSS.

An unexploded ordinance survey (UXO) may also be performed by the survey vessel at this time to confirm the trunkline route is free of any historic ordinances.

An MBES, a common survey tool for offshore surveys, may also be deployed to establish the profile of the seabed, using sound pulses.

Touchdown monitoring survey will be performed throughout the duration of the trunkline installation to regularly confirm that the trunkline is being installed to the design tolerances. This will be

performed by visual inspection from ROVs from either the SWLB or PV, or a dedicated survey vessel for the deep-water sections of the trunkline.

An as-laid survey will be performed after installation of the trunkline to inform the design of the backfill and post-lay rock dumping profiles and confirm the trunkline has been correctly installed prior to the commencement of pre-commissioning. These surveys will gather data on the position of the trunkline and the need for any additional span rectification.

An as-built survey will be performed on the fully completed trunkline post pre-commissioning to provide the baseline as-left condition of the trunkline, and identify any variance from the as-laid survey which may result from movement during the pre-commissioning process (in the case of wet pre-commissioning). Surveys will use a combination of MBES and ROV visual inspection to cover the full length of the completed trunkline.

Depending on pre-commissioning methodology (wet or dry) the as-laid survey may be used for as-built purposes, as minimal Trunkline movement occurs during dry pre-commissioning. For operational purposes either the as-laid or as-built survey will be input into the Woodside database to form the baseline for inspection surveys and maintenance planning into operations. The scope of these surveys includes the Trunkline, all in-line structures, pre-lay structures and span rectification.

### 3.11.2 Vessel Operations

#### 3.11.2.1 Shallow Water Lay Barge

A Shallow Water Lay Barge (SWLB) will be required for the installation of the nearshore section of the trunkline, up to around the State waters boundary, however activities with this vessel may extend into Commonwealth waters. Typical specifications of a SWLB are provided in Table 3-9.

The SWLB will be positioned using up to ten anchors, and forward movement of the SWLB to lay the trunkline will be achieved by continually repositioning the anchors with anchor handling tugs. Anchors may be placed up to ~800 m either side of the SWLB. The SWLB position during operations will be closely monitored and existing infrastructure will be considered when assessing the barge anchor patterns.

**Table 3-9: Specifications of a typical SWLB**

Properties	Description – example Saipem Endeavour
Vessel length	143.3 m
Vessel width	42 m
Draft	Minimum 4 m / maximum 6.38 m
Number of tensioners	2 x 75 t
Maximum A/R winch tension	150 t
Volume of largest fuel tank	375 m <sup>3</sup>

The SWLB will be assisted throughout pipelay operations by a spread nominally comprising of the following vessels:

- Two anchor handling tugs for mooring operations.
- Two shallow water tugs for mooring PV in very shallow water areas.
- Survey vessel for monitoring of the touchdown point of the trunkline.
- Two pipe supply vessels.

These vessels may move into Commonwealth waters (and work within the Operational Area covered under this EP) as they carry out activities close to the State waters boundary.

Anchor holding tests may be performed to ensure anchor requirements of the SWLB can be met. If an anchor is found to be dragging, the tension in the anchor wire will be released and remedial action in the form of redeployment and/or re-tensioning will be undertaken.

### 3.11.2.2 Pipelay Vessel

The Pipelay Vessel (PV) will install the trunkline in State and Commonwealth waters. The nominated vessel is the Saipem Castorone. Details of the PV are provided in Table 3-10. Installation will commence with recovery of the trunkline laid by the SWLB at around KP 31 (possibly out to about KP 33) in approximately 30 m water depth. The PV will maintain position during pipelaying operations using dynamic positioning.

The PV will be supported by a spread of pipe supply vessels, survey vessel and general supply vessels.

**Table 3-10: Specifications of the PV**

Properties	Description example - Castorone
Length	330 m (excluding ramp/stinger and helideck)
Width	39 m
Operational draft	Minimum 8 m, Maximum 10.6 m
Transit draft	8 m
S-lay stern ramp	120 m long hinged stinger
Number of tensioners	3 x 400 t
Maximum A/R winch tension	1200 t
Volume of largest fuel tank	1683 m <sup>3</sup>

### 3.11.2.3 Pipe Supply Vessel or DP Bulk Carrier

Pipe supply vessels or DP Bulk Carriers (in the case of the PV) will transport 12 m lengths of pipe from a mothership moored in State waters, to the SWLB and PV. DP Bulk Carriers are also known as B-types for this Petroleum Activities Program, and two are currently planned for use. These will cycle between the PV and the mothership and may be refuelled near the PV in-field. The B-type has a removable, automated, pipe-handling gantry crane and 5,700m<sup>2</sup> of total deck space.

**Table 3-11: Specifications for a typical DP2 B-type**

Parameter	Description example - Spliethoff DP2 B-type
Length	141.30 m
Width	24.50 m
Draft (open top)	7.85 m
Engines	5,300 kW Main Engine, 4 x 2,000 kW Auxiliary Engines
Fuel consumption	Service speed 15 mt/day or DP2 15-16 mt/day
Volume of largest fuel tank	250 m <sup>3</sup>

### 3.11.2.4 Construction Vessel

A construction vessel is planned to be used to install the PLET foundation and perform pre-commissioning of the trunkline. The construction vessel will use DP and have a large heave compensated crane, work class ROVs and large flat back deck space to perform the works.

Typical construction vessel parameters are presented in Table 3-12.

**Table 3-12: Typical construction vessel parameters**

Parameter	Description
Draft (max)	7 m
Length	95 m
Gross tonnage	6000-7000 t
Fuel type	Marine diesel
Total fuel volume	1339 m <sup>3</sup>
Volume of largest fuel tank	461 m <sup>3</sup>

**3.11.2.5 Support and Other Vessels**

Other vessels used for the Petroleum Activities Program include survey vessels, anchor handling (for the SWLB), 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 (e.g., Dampier, Onslow). The loading and back-loading of equipment, materials (including hazardous materials such as helicopter fuel, welding gases and chemicals for field joint coating) and wastes is one of the most common supporting activities conducted. Loading and back-loading is undertaken using cranes on the vessels to lift materials in appropriate offshore rated containers (e.g., ISO tanks, skip bins, containers) between the activity vessel and support vessel. The support vessels, when in the Operational Area, are also available to assist in implementation of the Oil Pollution First Strike Plan, should an environmental incident occur (e.g., spills).

**3.11.3 Trunkline Installation**

The trunkline is dual diameter with the diameter between the state waters boundary and ~KP 200 (approximately adjacent to the Pluto platform) being 36” and the remainder of the trunkline to the FPU being 32” diameter for a total route length of approximately 400 km in Commonwealth waters.

The key routing drivers for the trunkline are:

- minimising environmental impact
- avoiding any identified geohazards
- finding an optimum route up the continental slope (1000 m to 300 m water depth) which minimises intervention requirements and long-term integrity issues
- minimising the number of third-party trunkline crossings.

The shallow water section of the trunkline will be installed by a SWLB due to the water depth being under 30 m deep, which prevents access by the PV. The SWLB will construct the trunkline by welding together nominal 12 m lengths of pipe in the SWLB’s firing line (a series of work stations where welders weld the pipes together) and laying them to the seabed over the “stinger”, which supports the trunkline as it transitions from the SWLB to the seabed. As the pipes are 12 m long the SWLB moves forward 12 m at a time as each pipe joint is welded into the trunkline. Depending on the handover point between the SWLB and the PV, the SWLB may need to lay into Commonwealth waters.

Most of the trunkline will be installed from the multi-joint PV suitable for the high productivity required for 400 km of pipelay, and capable of laying through the deepwater sections of the trunkline route. Like the SWLB, the PV allows for welding together nominally 12 m lengths of pipe, each new section being welded to the previous section to form the trunkline. To operate at high productivity, the PV includes three firing lines. In two parallel firing lines three 12 m pipes are welded together to form 36 m long triple joints. These triple joints are then transferred into the main firing line where they are



welded together to construct the trunkline. Upon completion of welding; inspections and repairs or amendments are carried out as required and field joint coating applied, before the pipe is laid over a “stinger” on the stern of the vessel, down to the seabed. A tensioning system, consisting of three tensioners, holds the trunkline in the PV and allows the trunkline to be laid at the desired rate while maintaining the required tension as each new pipe-section is welded into the trunkline and the vessel moves forward. The welding together of the 36 m long triple joints means the PV moves forwards 36 m at a time enabling it to install the trunkline three times faster than the SWLB.

### **3.11.3.1 Buoyancy Removal**

The trunkline will be installed by the SWLB with buoyancy attached to the individual pipes close to the handover location to the PV. This installation aid is required to reduce the submerged weight of the trunkline as it is installed by the SWLB at ~30 m water depth.

Prior to recover of the trunkline by the PV, the buoyancy will need to be removed. This will be performed by a support vessel which will activate releases to release the buoyancy from the trunkline. The buoyancy will be tethered together to facilitate collection by the support vessel.

### **3.11.3.2 Pipe and Structure Delivery to the SWLB and PV**

During installation of the trunkline, pipe will be continuously delivered to the SWLB and PV by pipe supply vessels or DP bulk carriers. These vessels will be loaded with pipe from traditional cargo vessels moored in State waters and deliver the pipe to the SWLB and PV in the field. These vessels use DP to keep station alongside the SWLB and PV as they lay. During this time the pipe onboard is transferred by lifts using the crane onboard the SWLB and PV, usually with two lengths of 12 m pipe being transferred at a time. Pipe is planned to be transferred daily, allowing for continuous welding and laying of the trunkline.

Fabricated structures such as abandonment and recovery heads and the in-line tee, will also be delivered to the SWLB and PV respectively during the installation campaign from pipe supply vessels or DP bulk carriers. Similar to pipe transfer, these vessels will use DP to keep station alongside the SWLB and PV while the structures are lifted across by the cranes on the SWLB and PV.

### **3.11.3.3 Laying in Trenches**

During trunkline installation near the State waters boundary, the PV will install the trunkline within excavated trenches prepared by the Seabed Intervention scope. Following trunkline installation these trenches will be backfilled by the Seabed Intervention scope.

### **3.11.3.4 Laying over Existing Infrastructure**

During trunkline installation the PV will install the trunkline over the pre-installed rock berms constructed by the Seabed Intervention scope. This will enable the trunkline to clear the existing infrastructure (pipelines and fibre optic cables) with the required vertical clearance.

### **3.11.3.5 Laying Down Continental Slope**

During trunkline installation the PV will install the trunkline down the continental slope in the section excavated by the Seabed Intervention scope.

### **3.11.3.6 In-line Tee, Hot Tap Tees, ancillary structures**

An in-line tee, the two hot tap tees, foundations and ancillary structures or installation aids may be installed by the PV - the structures are welded into the trunkline during the normal lay process. These structures may need to be worked on (intervention) at a later date, by a construction vessel. This may include but not be limited to operation of valves and diverless connector, removal of yokes and buoyancy and installation of scour mattresses.

### 3.11.4 PLET and foundations Installation

Prior to installation of the PLET by the PV, foundations to support the PLET will be installed by a construction vessel with a heave compensated crane and work class ROVs. The PLET structure is too large to install through the firing line of the PV. As such when the PV reaches the end of the trunkline route adjacent to the FPU location, it will lay down the trunkline in its normal pipelay mode (S-lay) to the seabed. In order to then install the PLET, the trunkline will be recovered by the PV vertically and hang off the side of the vessel in a purpose-built hang-off porch. Here the PLET structure will be lowered down vertically on top of the trunkline by a mechanical A-frame and welded to the trunkline. Following completion of the welding, NDE and field joint coating, the PLET (now connected to the trunkline) will be lifted out of the hang-off porch and lowered to the seabed by a winch system on the PV and landed on top of the pre-installed foundation.

Following installation of the PLET by the PV, the PLET may need to be worked on (intervention) by the construction vessel. This may include but not be limited to operation of valves and diverless connector, removal of yokes and buoyancy and installation of scour mattresses.

### 3.11.5 Trunkline Pre-commissioning

Pre-commissioning of the trunkline will be performed to prove the trunkline integrity. Pre-commissioning may be undertaken using one of the following methods:

- Dry pre-commissioning (base case)
- Flood Clean Gauge Test (FCGT) – Full Trunkline (contingent scenario)

If dry pre-commissioning is unsuccessful or the requirements for dry pre-commissioning cannot be met, FCGT may be required to be carried out. Dry pre-commissioning is the preferred option and is considered the base case for pre-commissioning. However, this EP also includes the option of wet pre-commissioning with the potential for hydrotest discharges in Commonwealth waters.

#### 3.11.5.1 Dry Pre-commissioning (base case)

This is the basis for the project where the integrity of the Trunkline is proven via the quality control process used during design, manufacture, construction and installation. This includes consideration of activities such as coating of the pipe, transport to the field and installation where the welding Non-Destructive Examination (NDE) or testing (NDT) is a key deliverable. This method does not include hydrotesting (and any associated discharges); the Trunkline is installed dry and remains dry. At the completion of installation, the Trunkline is dried (of small volumes of condensation) and inerted with nitrogen. As a result, dry pre-commissioning results in no liquid discharge and a reduction in equipment and time.

Dry pre-commissioning is required to be approved by DMIRS and NOPSEMA in the Scarborough Export Trunkline Safety Case(s). Woodside will follow a DNV approved process to ensure integrity of the Trunkline through quality assurance / quality control processes during all phases of trunkline design, pipe manufacture, construction, coating, transport and installation. Therefore a decision regarding acceptability of dry pre-commissioning will be able to be made after the Trunkline has been fully installed and the dry commissioning process has been carried out. Woodside will need to show it has met all the requirements of the DNV approved plan for replacing wet-testing – if Woodside cannot satisfactorily demonstrate it has met all the requirements, wet pre-commissioning will have to be undertaken.

Dry pre-commissioning will be performed by the construction vessel at the PLET location. A down line from the construction vessel will be connected to the PLET and nitrogen will be flowed through the trunkline to shore to remove small volumes of condensation and then leave the trunkline in an inerted state. Nitrogen will be generated by a drying and inerting spread on the construction vessel which includes a Nitrogen Membrane Unit. To perform this scope the construction vessel ROVs will need to intervene on the PLET which may include the placement of work baskets on the seabed for storage of ROV tools.

### 3.11.5.2 Cleaning and Gauging Pigging

Cleaning and gauging pigging may be performed in support of the dry-commissioning philosophy. The purpose of cleaning and gauging is to remove contaminating substances such as mill scale, welding products, dust, dirt and salts, and to gauge the trunkline to locate and identify defects such as dents, debris or other internal restrictions prior to dry pre-commissioning. Cleaning and gauging will be performed using pigs propelled from the onshore temporary pig launcher with compressed air with a combination of freshwater slugs to clean the trunkline. Included in this pig train would be a calliper gauging pig that can gauge the dual diameter of the installed trunkline. This activity is only associated with dry pre-commissioning, and results in small discharges of treated water (the slugs between pigs, around 250 m<sup>3</sup>).

### 3.12 Non-production phase and IMMR

Following drying and inerting, the Trunkline will be left in a preserved state filled with Nitrogen, until commissioning and operations, when gas is introduced into the system. During this non-production phase, Inspection, Monitoring, Maintenance and Repair (IMMR) activities may be carried out, as required. Pressure will be monitored at the trunkline onshore head to confirm trunkline integrity. Baseline inspection will be conducted post-start-up of the Scarborough trunkline to establish baseline integrity.

### 3.13 Contingent Activities

#### 3.13.1 Flood, Clean, Gauge, Test and Dewater

The traditional method for proving integrity involves conventional flooding, cleaning, gauge and hydrotesting (FCGT also known as wet testing or hydrotesting). This method would only be used in the event of dry pre-commissioning failure or inability to get Safety Case approval for the dry pre-commissioning process (as discussed in 3.11.5.1).

Pre-flooding of the Trunkline with treated seawater occurs, to help manage integrity of the FCGT flooding operation (pig speed and air ingress), and reduce the likelihood of a failed hydrotest. This volume is then discharged while the Trunkline is being flooded for the FCGT using pigs.

Cleaning and gauging pigs would then be run from an onshore temporary pig launcher connected to the shore head to an offshore pig receiver located in Commonwealth waters. Flooding and cleaning pigs would be propelled using filtered and chemically treated seawater using an onshore pumping spread. Flooding water would be supplied by a temporary water winning line installed to provide sea water to the onshore pumping spread.

Once flooded, the trunkline would be pressurised using positive displacement pumps from the onshore shore crossing location. Hydrotesting would then be performed to measure the pressure within the trunkline over an extended period of time. Following completion of the test, the trunkline would be depressurised from onshore and left filled with treated seawater.

Dewatering of the trunkline would be performed using pigs propelled by compressed air with a combination of freshwater slugs to desalinate the trunkline. The displaced hydrotest water will be discharged offshore through a valve arrangement at the end of the Trunkline. Drying and inerting would then be performed and the Trunkline would be left nitrogen filled until hot commissioning.

Activities at the discharge location will be performed with the construction vessel and may include, but not be limited to, intervention on the PLET (attachment of a pig receiver), which could release small volumes of monoethylene glycol (MEG) used to inert the cavity between the PLET valve and diverless connector, and placement of work baskets on the seabed for storage of ROV tools.

#### 3.13.2 Wet Buckle Response

A wet buckle is an event that could occur during trunkline installation and is typically caused by a loss of station keeping of the SWLB or PV and results in the trunkline buckling at the touchdown

point on the seabed causing it to flood with seawater. To recover from this scenario the damaged section of the trunkline will need to be removed and the remaining good section of trunkline dewatered. It is necessary to carry out dewatering and repairs as soon as possible to minimize damage (corrosion) to the Trunkline internal lining. The decision-making process to carry out a wet buckle repair will include ensuring the cause of the buckle has been rectified (i.e. it is safe to commence recovery of the Trunkline).

The damaged section of trunkline will be cut from the remainder of the trunkline using equipment such as a diamond wire saw and moved out of the trunkline route. Using a contingency wet buckle spread, kept in place at the shore crossing location within the Pluto Gas Plant, the trunkline will first be flooded with seawater (treated or untreated, depending on wet buckle recovery philosophy) for preservation, and then dewatered from shore to offshore using a pig train, potentially separated by chemically treated fresh water (desalination) slugs. Upon completion of this activity, the trunkline is recovered to the PV and installation activities will continue. The damaged section of the trunkline will then be cut into recoverable lengths (nominally 12 m joints) and recovered by a construction vessel.

### 3.13.3 Trunkline Abandonment and Retrieval

The trunkline may need to be abandoned and recovered during the course of installation. This could be multiple times. Abandonment is typically required when the sea states exceed the approved limit for trunkline installation, or due to an issue with supply of pipe to the vessel, mechanical requirements or approaching cyclone. Abandonment is performed by welding an abandonment head to the trunkline, connected to the abandonment winch and then opening the tensioners and carefully lowering the trunkline to the seabed. Recovery is the reverse of this operation. Abandonment needs to be performed in a straight line, therefore if an abandonment occurs at a bend in the trunkline route, lay-down on the seabed may move outside of the original/expected trunkline footprint. It is important to note here that the catenary of trunkline to be abandoned to the seabed is nominally 2.5 times the water depth.

### 3.13.4 Retrieval of Lost Buoyancy Tanks

The use of buoyancy tanks during pipelay activities will include redundancy so that loss of a certain number of buoyancy tanks can occur without compromising the operation. In the unlikely event of disconnection of a buoyancy tank, it will be recovered by a tug or support vessel.

### 3.13.5 Temporary Mooring of Trunkline Installation Vessel

The PV may be required to temporarily moor on location via its anchor, in the case of a contingency scenario. This would be done away from subsea assets to prevent damage. Under normal operations the vessel operates under DP.

### 3.13.6 Wet Parking Equipment

Equipment, materials or tools may need to be wet parked on the seabed in the Operational Area during installation of the trunkline. This could include, but not be limited to, work baskets for ROV tools, pig launcher/receiver prior/after connection to the PLET, scour mattresses etc. Any wet parked items will be removed from the seabed.

### 3.13.7 Jetting and Mass Flow Excavation

Jetting and/or mass flow excavation may be used during the trunkline installation for span rectification. These activities would be performed from a construction vessel.

### 3.13.8 Pre-lay Removal of Obstructions

In the event the pre-lay survey of the trunkline route identifies any obstructions that may impact the trunkline installation, these obstructions will need to be removed. This will be performed by a construction vessel using ROVs and heave compensated crane.

### 3.13.9 Dead Man Anchor pipelay initiation

In the remote event that the nearshore section of the trunkline in State waters is not installed prior to the arrival of the PV, a Dead Man Anchor (DMA) will be used to initiate trunkline installation. This involves setting the DMA on the trunkline route with a long pennant wire connected to the first pipe of the trunkline in the PV. The DMA is required to provide tension (by the PV pulling on the DMA wire) as the trunkline is laid to the seabed. After a sufficient length of the trunkline has been installed the DMA and associated pennant wire will be removed.

### 3.13.10 Maintenance of Trenches and Rock Berms

In case pre-lay trenches are silting up prior to pipelay (due to a storm/cyclone event, delays to pipelay or other causes) secondary dredging of settled material in trench may need to occur to reprofile the trench to design utilising the TSHD, with the associated dredged material placed in Spoil Ground 5A.

In the continental slope excavation area, reprofiling may also be required in case slumping/deterioration of the trench profile has occurred over time. It is anticipated that the same equipment would be deployed which carried out the original excavation activity, but depending on the nature and size of the work required a smaller locally available unit (Mass Flow Excavator [MFE], ROV tooling, etc) may be sufficient to carry out the work.

The infrastructure crossing rock berms are designed to withstand severe weather events. However, if in the unlikely case the berms do require rework, this would likely be executed with the RIV, adding some rock volume to reinstate berm height, width or slope angles.

### 3.13.11 Deburial

In case of faults (or suspected faults) found in the as-constructed trunkline in any section where the pipeline has been buried (after sand or rock placement), the burial material may need to be removed to allow inspection and possible repair of the suspect area. Methods considered for this work in Commonwealth waters are typically MFE, jetting, grab systems or (partial) re-dredging with the TSHD. Spoil would be deposited in the designated Spoil Ground 5A (in case of TSHD intervention) or remain close to the pipeline alignment (all other methods).

### 3.13.12 Remediation Work

Re-dredging or removing of misplaced sand backfill may be required in case spoil disposal occurred outside the spoil dump area or erroneous placement of rock material and it was decided in coordination with relevant stakeholders that additional intervention is the correct response. Remediation could take the form of application of an MFE attempting to move material away from the offending position, use of a grab system to relocate or re-dredging with the TSHD.

### 3.13.13 Hydrotest discharges for IMMR activities during non-production phase

If the trunkline is damaged while in preservation on the seabed following installation (and before the introduction of hydrocarbons), the trunkline may be exposed to raw seawater and/or repair may be required. In this case, integrity of the trunkline may need to be confirmed through traditional flood, cleaning, gauging and testing (FCGT). If FCGT is used for this purpose, discharges of treated seawater may occur at the location of the Trunkline resection and/or the Pipeline End Termination (PLET, ~KP433). Impacts are considered to be similar to those covered in Section 6.7.8 for wet buckle discharges. Trunkline repair will be carried out as per the *Woodside Pipeline Repair Strategy*, which covers aspects such as damage assessment, welding procedures, mechanical connectors / repair clamps etc.

## 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 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 derived from three key locations. The Hydrocarbon EMBA is also used to define the EMBA (Figure 4-1), which includes the dredging Zone of Influence (Section 6.7.2). The ecological impact thresholds used to delineate the EMBA are defined in Section 6.8.1. The worst-case credible spill scenario for this EP is loss of marine diesel during a vessel collision. The EMBA also includes any areas that are predicted to experience shoreline contact with hydrocarbons above threshold concentrations.

Woodside recognises that hydrocarbons may be visible beyond the EMBA at lower concentrations than the ecological impact thresholds defined in Section 6.8.1. 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 Figure 4-2 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, with release from three key locations.

This EP also refers to a Zone of Influence (Zoi) associated with seabed disturbance from seabed intervention and pipelay activities. The Zoi is defined in Section 6.7.2 and is located within the EMBA.

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

Hydrocarbon Type	EMBA <sup>1</sup>	Socio-cultural EMBA <sup>1</sup>	Planning Area for Scientific Monitoring
Surface	10 g/m <sup>2</sup> 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 <sup>2</sup> This represents a wider area where a visible sheen may be present on the surface and, therefore, the concentration at which socio-cultural impacts to the visual amenity of the marine environment may occur. However, it is below concentrations at which ecological impacts are expected to occur.  This low exposure value also establishes the planning area for scientific monitoring (NOPSEMA guidance note: A652993, April 2019).	
Dissolved	50 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note: A652993, April 2019). As dissolved hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors can be		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,

Hydrocarbon Type	EMBA <sup>1</sup>	Socio-cultural EMBA <sup>1</sup>	Planning Area for Scientific Monitoring
	associated with ecological impacts. Therefore, dissolved hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		April 2019). This area is described further in Appendix D: Figure 5-1.
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.		In the event of a spill, DNP will be notified of AMPs which may be contacted by hydrocarbons at this threshold.
Shoreline	100 g/m <sup>2</sup> This represents the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat.	10 g/m <sup>2</sup> 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

<sup>1</sup> Further details including the source of the thresholds used to define the EMBA in this table are provided in Section 6.8.1.

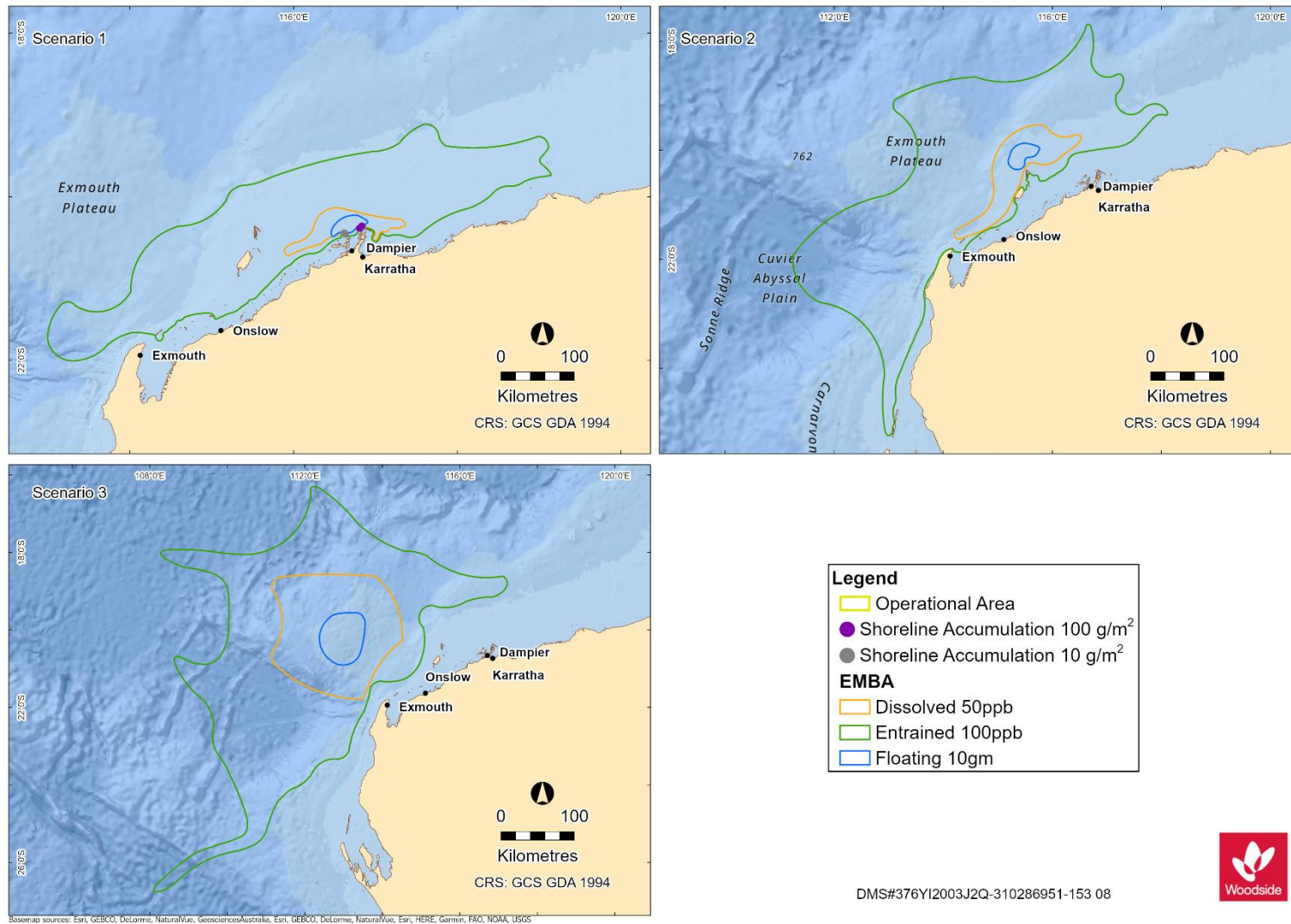


Figure 4-1: Hydrocarbon thresholds used to define the EMBA

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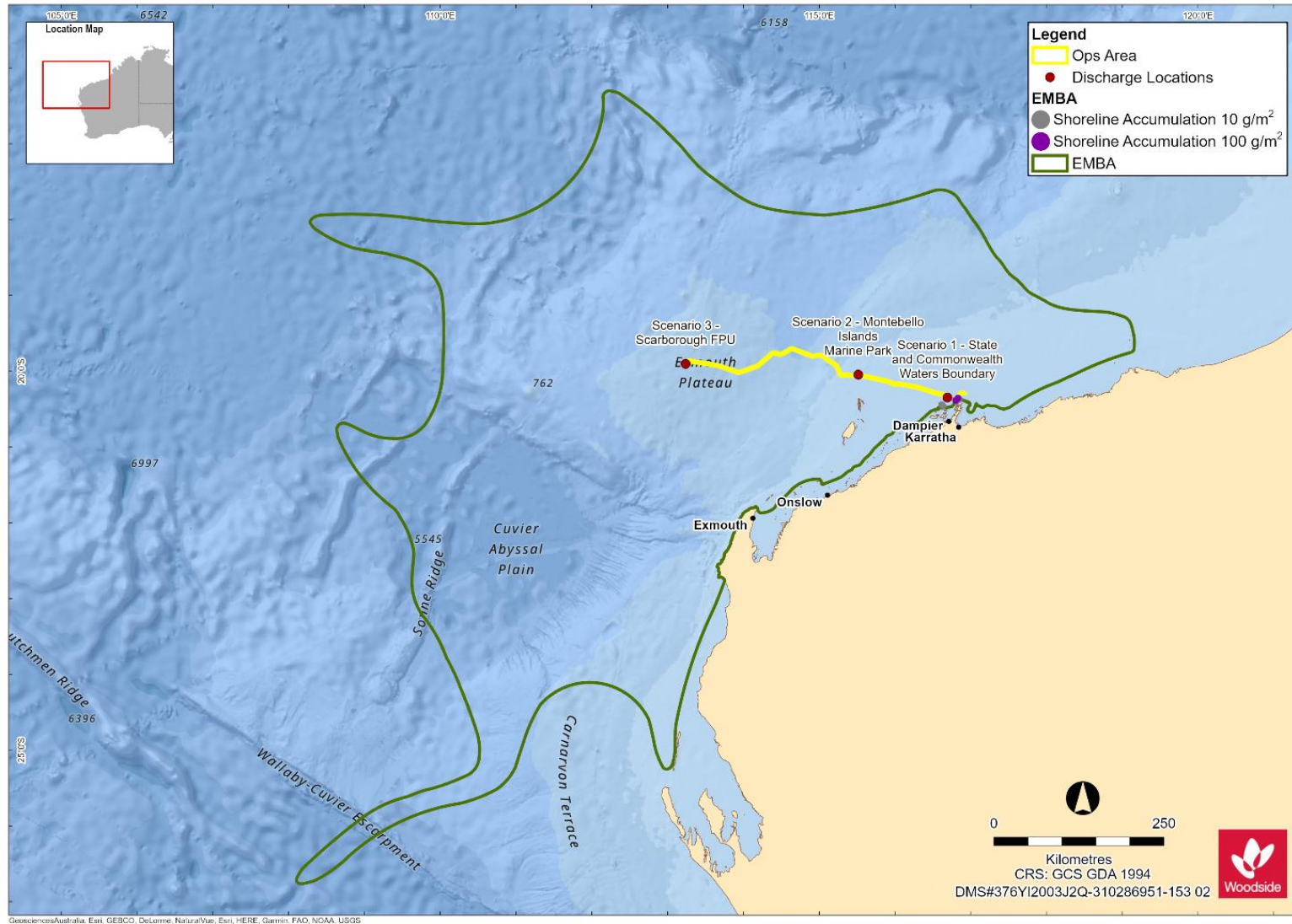


Figure 4-2: Environment that may be affected by the Petroleum Activities Program

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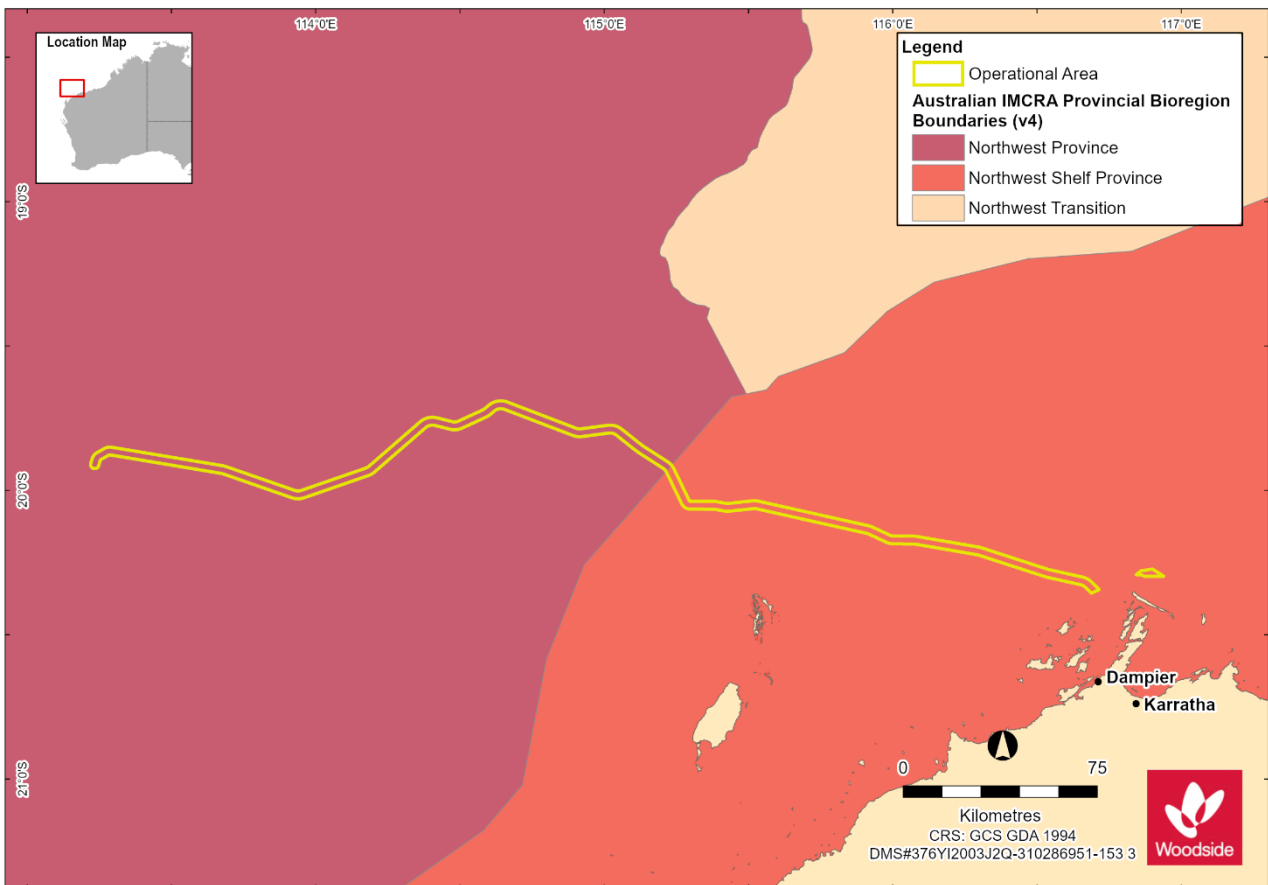
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## 4.2 Regional Context

The Operational Area is located in Commonwealth waters within the North-west Marine Bioregion (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0) (Commonwealth of Australia, 2006), in water depths of ~31 m (trunkline route at State waters boundary) to 1400 m (KP 275 of the trunkline route). The Operational Area overlaps a number of provincial bioregions within the NWMR; the Northwest Shelf Province (NWSP) and the Northwest Province (NWP). The Zone of Influence (ZoI) associated with dredging and pipelay activity is situated within the NWSP. The EMBA also overlaps the Northwest Transition (NWT), the Central Western Shelf Transition (CWST), and the Central Western Province (CWP) (Figure 4-3). Section 2.2 in Woodside’s Description of the Existing Environment in Appendix H and the Scarborough OPP summarise the key characteristics for these marine bioregions.



**Figure 4-3: Location of the Operational Area 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 Operational Area and EMBA, respectively, according to Protected Matters Search Tool (PMST) results (Appendix C). It should be noted that the EPBC Act PMST is a general database that conservatively identifies areas in which protected species have the potential to occur.

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

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

MNES	Number	Relevant Section
World Heritage Areas	0	4.9.1
National Heritage Places	0	4.9.1
Wetlands of International Importance (Ramsar)	0	4.9.1
Commonwealth Marine Area	1	4.9.1
Listed Threatened Ecological Communities	0	4.5
Listed Threatened Species	23	4.6
Listed Migratory Species	39	4.6

**Table 4-3: Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the EMBA**

MNES	Number	Relevant Section
World Heritage Areas	2	4.9.1
National Heritage Places	3	4.9.1
Wetlands of International Importance (Ramsar)	0	4.9.1
Commonwealth Marine Area	2	4.9.1
Listed Threatened Ecological Communities	0	4.5
Listed Threatened Species	39	4.6
Listed Migratory Species	64	4.6

## 4.4 Physical Environment

### 4.4.1 Climate and meteorology

The Operational Area and wider EMBA are reflective of the climatic conditions of the NWMR, experiencing a monsoonal climate and maximum average air temperatures of 39.5°C in summer and 15.6°C in winter. Rainfall is highest during the wet season in late summer, and extremely low during winter (dry season). Seasonal wind patterns in the NWMR are dictated by atmospheric pressure, with prevailing winds from the north-west and south-west in the summer, and from the north-east and south-east in the winter. Tropical cyclone activity occurs between November to April, peaking between December and March. Appendix H and the Scarborough OPP provide a detailed description of the climate and meteorological conditions for the region (Table 2-3, Appendix H), and the Scarborough Area (Table 2-5, Appendix H).

### 4.4.2 Oceanography

The ocean temperatures in the NWMR are tropical year round, with sea surface temperatures reaching ~26°C (open shelf) and ~31°C (nearshore) in summer and ~22°C (open shelf) and ~17°C (nearshore) in winter. The NWMR is heavily influenced by major surface currents flowing poleward, including the Indonesian Throughflow (ITF), Leeuwin Current, South Equatorial Current, and the Eastern Gyral Current. Seasonal surface currents are also present in the region, including the Ningaloo Current, Holloway Current, Shark Bay Outflow and the Capes Current. Sub-surface currents flow towards the equator, including the Leeuwin Undercurrent and West Australian Current. Appendix H and the Scarborough OPP provide a detailed description of the oceanographic

conditions for the NWMR region (Table 2-3, Appendix H), and the Scarborough Area (Table 2-5, Appendix H).

#### 4.4.3 Bathymetry, geomorphology and sedimentology

The geological history of the region has influenced the complex geomorphology and sedimentology of the NWMR. Water depths reach to 6000 m, however over 40% of the region features water depths of less than 200 m. The NWMR is described as an extensive area of shelf, slope, abyssal plain and deep ocean floor, with complex geomorphic features. These include plateaus, terraces, banks, canyons and a number of banks and reefs located on the outer shelf/slope. The continental shelf features sand and gravel sediments, that are replaced by mud and fine soft sediments on the continental slope. The abyssal plain is characterised by non-carbonate mud.

The bathymetry of the EMBA is characterised by continental shelf/slope, abyssal plain, canyons, terraces and reefs and sediments are representative of the wider region (Figure 4-4).

##### 4.4.3.1 Trunkline Project Area

The Trunkline Project Area extends from the State-Commonwealth waters boundary on the inner continental shelf, onto the continental slope where it traverses the continental slope westwards to the Exmouth Plateau. The eastern half of the Trunkline Project Area is adjacent to the existing Pluto trunkline. The water depth ranges from ~31 m (trunkline route at State waters boundary) to 1400 m (KP 275 of the trunkline route).

Table 4-4 provides a summary description of the seabed along the trunkline route, including seabed features and along the trunkline route from the State waters boundary (KP 32) to the intersection of the trunkline route with the north-western limit of the Montebello Marine Park (approximately KP 191). Beyond KP 191 the seabed is located on the Exmouth Plateau, which is characterised by a thick Triassic sequence overlain by a Jurassic, Cretaceous and Cainozoic sediment sequence; and fine grained carbonate ooze (Fugro, 2010). Sediment samples collected at the end of the trunkline route were predominantly composed of clay and silt; and only small amounts (1–3% w/w) of sand and shell (ERM, 2013).

**Table 4-4: Summary of seabed features, sediments, epifauna and infauna along the proposed trunkline route.**

Section of Trunkline	Seabed features and sediments	Epifauna and infauna
KP 32 – KP 43.1	<ul style="list-style-type: none"> <li>The seabed is predominantly flat, smooth and featureless</li> <li>Sediments comprise carbonate sands with some finer components.</li> </ul>	Sparse ascidians, sponges, invertebrate communities, burrowing organisms and octocorals were observed from the drop camera study. This benthos is considered representative of the area and is similar to that observed in other regional studies (Keesing, 2019; Advisian, 2019a).
KP 43.1 – KP 52.5	<ul style="list-style-type: none"> <li>Seabed expected to comprise carbonate sand and shell gravel</li> <li>The seabed is predominantly flat and featureless between KP 43.1 and KP 52.5</li> <li>Minor accumulations of coarser sediments between KP 43.9 and KP 44.9 and KP 47.1 to KP 50</li> <li>KP 50 to KP 52 there are a number of isolated depressions visible on the seafloor.</li> </ul>	

Section of Trunkline	Seabed features and sediments	Epifauna and infauna
KP 52.5 – KP 108.4	<ul style="list-style-type: none"> <li>Seabed sediments are expected to comprise carbonate sands with shell gravel</li> <li>Depressions appear throughout the route corridor it seems that the clusters of depressions mostly occur when the calcarenite is outcropping at seafloor. These depressions run perpendicular to the proposed trunkline route</li> <li>Geotechnical sampling within this section recovered carbonate sands with some silt content.</li> </ul>	<p>The predominantly featureless seabed is not expected to support abundant or diverse benthic communities and is considered typical of the North West Shelf.</p> <p>The presence of oil and gas infrastructure may artificially increase habitat complexity in areas of featureless seabed, resulting in higher species richness and abundance of fish species and epifauna associated with infrastructure, compared to adjacent natural habitats (McLean et al., 2020; McLean et al., 2018; McLean et al., 2017; Bond et al., 2018).</p>
KP 108.4 – KP117.6 (Montebello Marine Park MUZ)	<ul style="list-style-type: none"> <li>Seabed sediments are expected to comprise carbonate sands with shell gravel which was confirmed by geotechnical sampling</li> <li>Localised increases in reflectivity tend to be associated with the presence of numerous depressions and exposure of the underlying calcarenite unit</li> <li>Shallow soils isopach occur along the corridor and tends to show a cover of sand which suggests that these areas are more likely to represent accumulations of coarse material or disturbed seabed rather than outcrop.</li> </ul>	<p>The results of previous benthic studies in the Montebello Marine Park are largely in alignment with the geophysical data (i.e. typically low relief sandy seafloor (with various bedforms) with occasional rubbly areas increasing at sites more inshore) and dominant benthic organisms identified (which varied in diversity and density within and between survey areas, but typically included a wide variety of sponges and soft corals including whips and gorgonians, hydroids, seapens and crinoids) (Advisian, 2019a).</p>
KP 164.1, - KP 173.6 (Montebello Marine Park MUZ)	<ul style="list-style-type: none"> <li>Seabed sediments are expected to comprise carbonate sands with shell gravel</li> <li>The underlying calcarenite is expected to outcrop at seabed within the majority of this area, however, apart from appearing marginally less smooth and sometimes slightly mottled, the seafloor otherwise appears very uniform without any noticeable increase in reflectivity.</li> </ul>	<p>The harder areas of calcarenite have the potential to support more abundant and diverse benthic communities, however the patchiness of the exposure of the underlying hard substrate is expected to limit the potential to support significant epifaunal habitats.</p>
KP 173.6 – KP 191.6 (Montebello Marine Park MUZ)	<ul style="list-style-type: none"> <li>Seabed appears moderately reflective and predominantly featureless. Isolated features and clusters are noted. These depressions often show associated small mounds</li> <li>Between KP 173.4 and KP 178.1 the seafloor appears more irregular and slightly mottled. Lineations in the calcarenite are oriented approximately north-east to south-west, and this area is thought to represent the outer reef which is characterised by linear ridges and relict sandwaves</li> <li>Relict sandwaves are present between KP 184.7 to KP 190.6. The sandwaves exhibit an approximate north-south orientation, have wavelengths of between 150 m to 300 m, and measure up to 10 m in height. Surficial seabed sediments are expected to comprise carbonate sands with shell gravel.</li> </ul>	



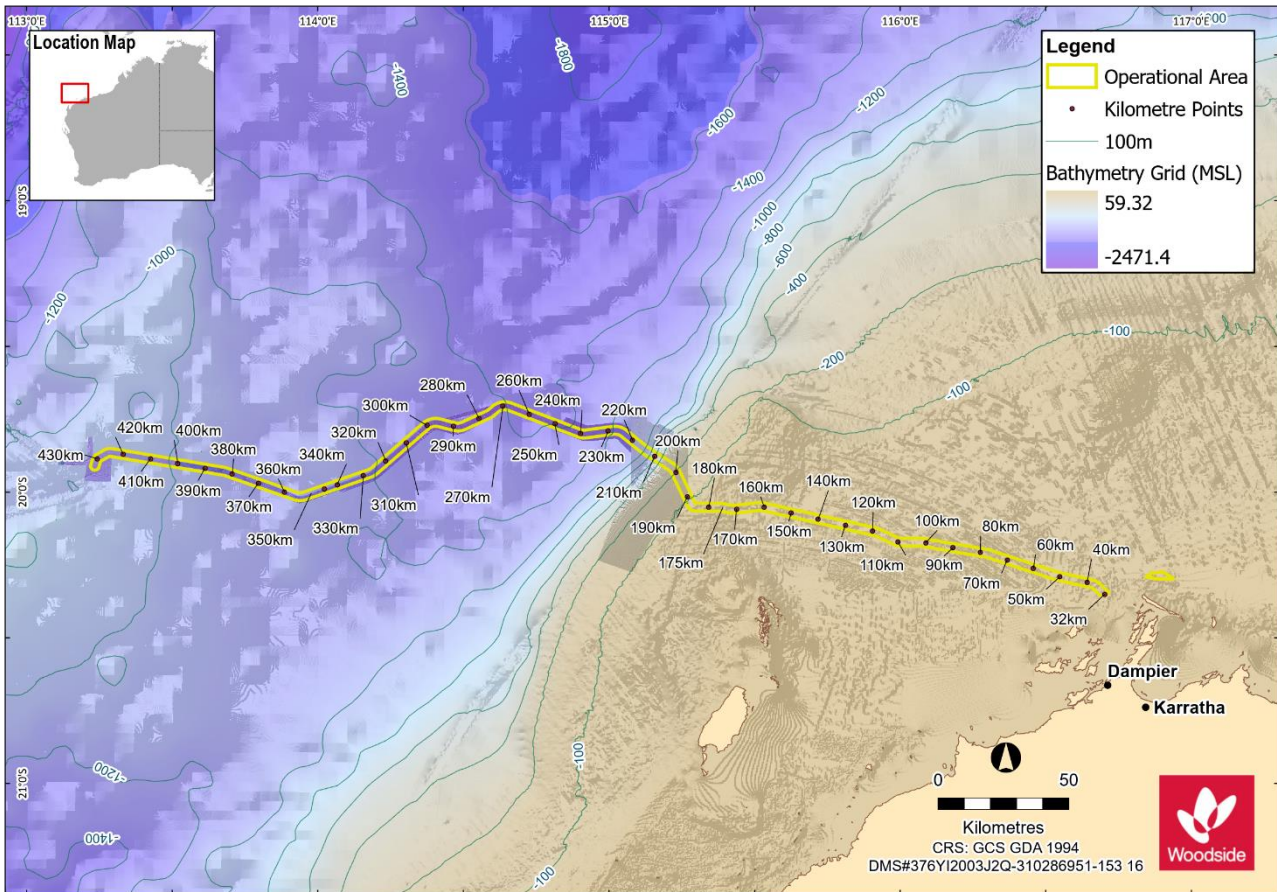


Figure 4-4: Bathymetry of the Operational Area

#### 4.4.3.2 Offshore Borrow Ground Project Area

The Offshore Borrow Ground Project Area lies just outside the State waters boundary to the north-east of the Dampier Archipelago (about 15 km). Water depths in this area are shallow (~35-45 m), increasing gradually in a north to north-west direction. The Offshore Borrow Ground Project Area lies within the continental shelf and is characterised by a generally flat / undulating and uniform seabed.

Sub bottom profiler data shows a cover of superficial sand overlaying a variably cemented calcarenite unit. The depth of the superficial sand layer typically ranges between 1 m and 2 m across the borrow ground area. The seabed appears predominately flat, smooth, and featureless. Sand waves were observed at three locations across the borrow ground area exhibiting a northeast-southwest orientation displaying heights of <0.5 m with typical wavelengths of 5-10 m. Numerous ribbons features occur across the borrow ground area. These features occur predominantly in the northern half of the site and are oriented approximately northwest-southeast. They are expected to represent current aligned accumulations of coarser sediments. Both the sand wave and ribbon seabed features suggest that sediment transport of the superficial sand layer, is occurring in an approximate northwest-southeast or southeast-northwest direction (Neptune 2018).

Surveys have been completed at the Offshore Borrow Ground Project Area (Advisian, 2019b) to determine the suitability of the proposed area as a source of trunkline stabilisation material. Towed video and drop camera surveys of both the potential borrow ground and the Dampier Marine Park directly adjacent to the borrow ground, confirm that the seabed and its benthic composition are relatively uniform in structure and composition. Both locations are dominated by bare substrate with large areas of seabed that are apparently largely devoid of any epibenthic species.

Based on findings by Fugro (2019) from a geotechnical investigation, on average, the material within the offshore borrow ground consists of approximately 94% coarse sand (>130 µm), 3% fine sand (75-130 µm) and 3 % clay and silt (<75 µm). These percentages were derived from the boreholes and associated soil properties. As such, the PSD data for the offshore borrow ground can be characterised mainly as coarse sand with a low fines fraction, with coarseness and layer thickness increasing towards the eastern part of the borrow ground.

Appendix H and the Scarborough OPP provide a summary of the physical characteristics of the environment within the EMBA.

## 4.5 Habitats and Biological Communities

### 4.5.1 Primary Productivity

Primary productivity in the region is typically low, driven by offshore influences, with periodic upwelling and cyclonic events driving coastal productivity (Brewer et al., 2007). Localised upwelling generally occurs as a result of the changing strength of the ITF, internal tides, cyclones, and their interaction with the complex seafloor topography.

The planktonic communities that drive primary productivity in the region are comprised of phytoplankton and zooplankton (protozoa, copepods, ichthyoplankton etc.). Phytoplankton abundance increases as a result of an increase in nutrient availability, in turn supporting an increase in zooplankton. Mass coral spawning events in the NWMR during March and April contribute to peaks in zooplankton abundance.

The planktonic communities of the EMBA and Operational Area are likely to be representative of the wider region. Offshore planktonic communities feature smaller taxa, whereas inshore communities are dominated by larger taxa such as diatoms. The greatest productivity is likely to be around the 200 m isobath, associated with the shelf break. Further information regarding the planktonic communities of the Scarborough Area and the NWMR are detailed in Sections 4.2 and 4.3 of Appendix H and the Scarborough OPP.

### 4.5.2 Benthic Habitats and Communities

The NWMR is characterised by diverse nearshore primary producer habitats such as seagrass meadows, coral reefs and mangrove forests, to offshore soft sediment seabed habitats and submerged and emergent reef systems. Benthic communities range from infauna and low density sessile filter feeders of soft sediments and deeper waters, mobile macrobenthos and diverse hard coral communities in shallower habitats. Table 4-1 in Appendix H provides further details for the habitats and biological communities found within the NWMR.

The EMBA is likely representative of the wider region, featuring sparse mobile epifauna (i.e., arthropods and echinoderms) and sessile filter feeders (sponges, soft corals etc.). Hard coral assemblages are generally found in shallower waters (< 50 m) on the seaward slopes of outer islands of the Dampier Archipelago, as well as fringing reefs around the Montebello Islands, Barrow Island, Muiron Islands and Ningaloo Reef. Regionally significant Rankin Bank and Glomar Shoal (~25 km north-east and ~78 km north of the Trunkline Project Area, respectively), are present within the EMBA, hosting diverse benthic assemblages across complex seafloor features. Glomar Shoal is designated a Key Ecological Feature (KEF) (Table 9-1, Appendix H). Seagrass meadows and benthic macroalgae reefs are located in shallow waters surrounding the Dampier Archipelago, Muiron and Barrow islands in sheltered areas and subtidal habitats (Table 4-1, Appendix H).

The benthic communities within the Operational Area are further summarised in Table 4-6. The Trunkline Project Area is likely to feature sparse ascidians, sponges, invertebrates, infauna and burrowing organisms and octocorals, representative of the area (Table 5-2, Appendix H). No primary producer communities (hard corals, seagrass, macroalgae) are expected to occur due to the lack of light.

**Offshore Borrow Ground Project Area:** The Offshore Borrow Ground Project Area is likely to feature little to no biota, with anemones and crinoids accounting for less than 5% cover. Where epibenthos is present, the percentage cover of species is comparatively low (in the order of 5%), with no transects recording greater than 10% coverage in the species present. Common species present were alcyonaceans (mainly solitary soft corals), pennatulaceans (sea pens), crinoids (feather stars), asteroids (sea stars) and hydroids. No benthic primary producer habitat in the form of hard corals, macroalgae or seagrass was recorded or observed along any of the survey transects.

The benthic habitat observed is consistent with a broad scale characterisation of the Pilbara seabed undertaken by UWA and CSIRO (Pitcher et al., 2016). Additional survey work completed by CSIRO shows benthic cover at the proposed offshore borrow ground and adjacent habitat protection zone is not regionally significant, and benthic cover is lower than that identified regionally (Keesing, 2019).

**Spoil Ground 5A:** Surveys of Spoil Ground 5A indicated sparse coverage of ascidians, sponges, invertebrate communities, octocorals and infauna, representative of the wider NWMR (Woodside, 2009). The spoil ground has previously been used for spoil disposal from the Pluto Foundation trunkline and is therefore a pre-disturbed area.

**KP 32 to KP 50 (area of proposed seabed intervention):** As part of the Pluto LNG Foundation Project, drop camera surveys were completed to determine the presence and extent of any sessile benthic assemblages adjacent to the proposed trunkline route (within 1 km). The survey was completed between the State waters boundary and to a point adjacent KP 50.3 (Woodside, 2009). The seabed was characterised as fine to coarse sand with low species abundance and diversity with sparse sponges and soft corals typical of habitat on the North West Shelf. Given the seabed substrate observed in the drop camera study aligns with the geophysical and geotechnical data collected along the trunkline route, benthic communities and habitats along the proposed trunkline route are expected to be similar to those observed in the drop camera study.

**KP 50 to KP 109:** Between KP 52.5 and KP 109 the seabed is generally featureless with the exception of some depressions noted from the geophysical data that appear to expose the underlying calcarenite and areas where the underlying calcarenite is intermittently exposed at the seabed. The areas of calcarenite are often overlain with a thin veneer of sediments which limits the spatial area of hard exposed substrate. Seabed sediments were confirmed from the geotechnical survey as comprising carbonate sands with some silt and shell gravel. The calcarenite outcrops generally run perpendicular to the trunkline and are spread widely over the North West Shelf (Wilson, 2013). Any intersections of the isolated calcarenite outcropping identified from the geophysical data represent a very small area ( $<0.01\text{km}^2$ ), given the 32 inch diameter of the pipeline.

**KP 109 and KP 192 (Montebello AMP):** The trunkline route intersects the Montebello AMP between KP 109 and KP 191.7. The seabed along the South East corner of the Montebello Islands Marine Park between KP 109 and KP 145 is generally featureless with the exception of some depressions noted from the geophysical data that appear to expose the underlying calcarenite. From KP 117.7 some calcarenite outcrops intersect the trunkline route. Keesing (2019) showed that the topography in the vicinity of the Scarborough trunkline is predominantly flat bottom with some occasional bioturbated areas, and the substrate is typically fine sands. These sites within the vicinity of the Scarborough trunkline had low numbers of sponges, whips and gorgonians and as a result, complex benthic filter feeder communities were largely absent. From KP 145 to KP 192 the seabed starts off generally featureless with the exception of some small depressions. From approximately KP 173 the calcarenite exhibits subtle northeast-southwest oriented lineations observed in the bathymetry, but a veneer of sediment is thought to cover these outcrops. From approximately KP 185 relict sandwaves are observed from the geophysics data.

An ROV survey of the trunkline route within the Montebello AMP was undertaken in 2019 (Advisian 2019b). Video imagery was collected from between one and three transects from five separate sites along the trunkline route through the Montebello Marine Park. Area 1 was located in the vicinity of the ancient coastline KEF; and Areas 4 and 5 were in the vicinity of the existing Pluto trunkline. A summary of the benthic habitat analysis of ROV footage within the Montebello AMP is provided in

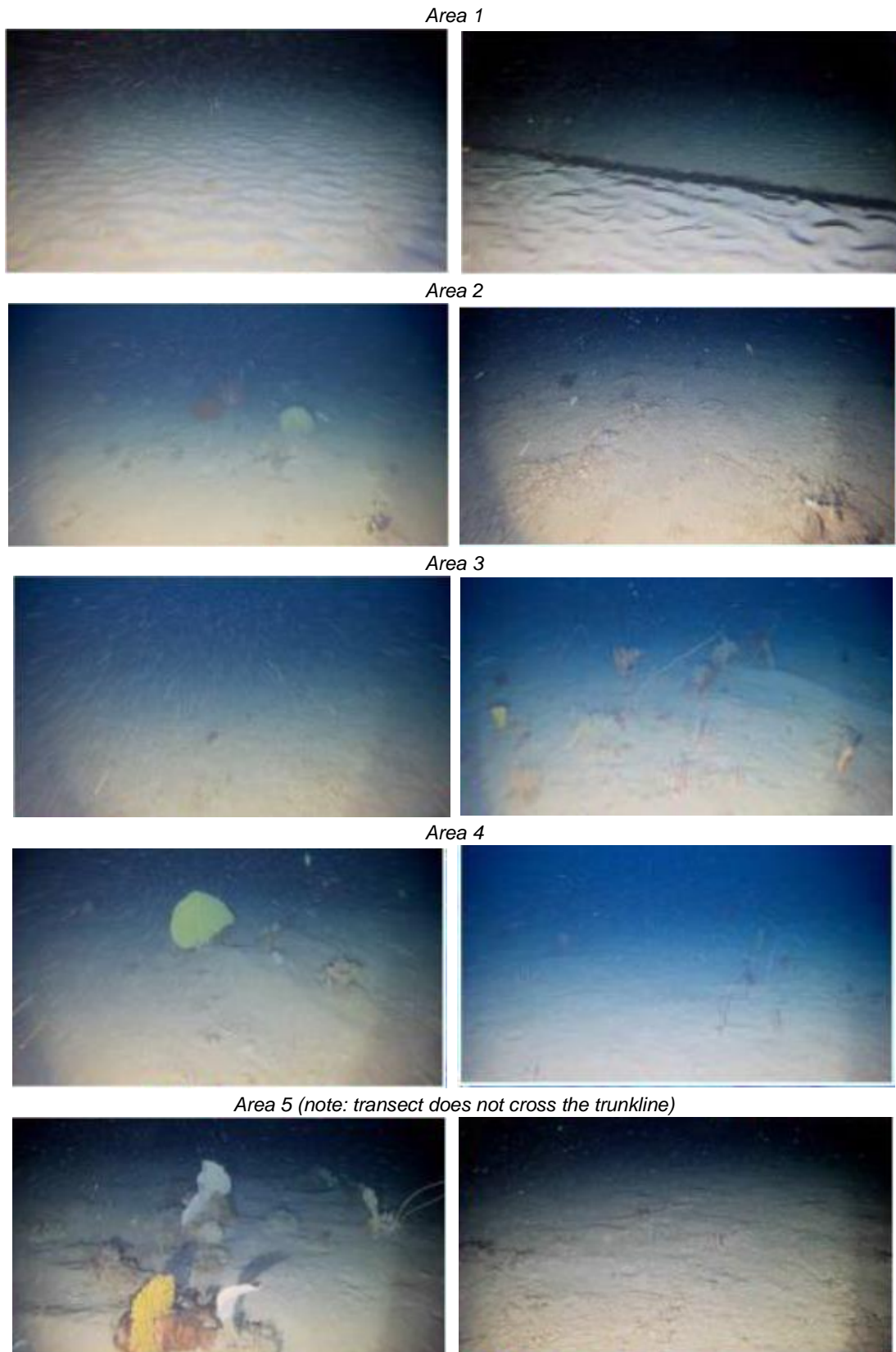


Table 4-5 and an example of ROV footage is shown in Figure 4-5. Section 5.6.1 of the Scarborough OPP further describes the results from the ROV survey. The area in which the trunkline intersects the North West section of the Montebello AMP was found to be characterised by bare sandy sediments, interspersed with predominantly sparse benthic communities and epifauna. Denser areas of sponges were observed in areas identified from the bathymetry as having a more complex seabed structure.

**Table 4-5: Summary of benthic habitat analysis of ROV footage within the Montebello AMP**

Survey Area	Summary
1	<ul style="list-style-type: none"> <li>• Transect 1a was located within the KEF; Transects 1b and 1c were not. No potential features of the KEF (i.e. areas of hard substrate with high biodiversity) were seen along any of the transects surveyed.</li> <li>• Benthic habitat along all transects were typically bare sand with various bedforms including flat bare sand, small ripples (of 2D and 3D forms) and small 'steps' (&lt;50 cm).</li> <li>• Some areas of seafloor were bare, while others were covered in a light bacterial mat and others were seen to have a cover of biogenic gravel (of unidentified origin). The cover of biogenic gravel changed continuously over the course of the transects.</li> <li>• No moderate or high relief features or areas of consolidated hard substrate were present within any transect.</li> <li>• Benthic organisms (including sponges and soft corals) were present on occasion and generally occurred as single or low density aggregations of individuals. The cover of benthic organisms in ranged from 0% to ~15% (highest in Transect 1c).</li> <li>• Bioturbation of the seafloor was evident in all three transects indicating the presence of mobile organisms living on and within the seabed. Mobile organisms including fish, echinoderms and jellies, were also noted on the video.</li> </ul>
2	<ul style="list-style-type: none"> <li>• The seafloor was relatively flat and sandy with a light to high cover of unconsolidated biogenic gravel and/or organic material. Small undulations of the seabed were seen but no other regular bedforms such as sand ripples or sand waves were apparent.</li> <li>• No significant high relief habitat features, or areas of consolidated hard substrate, were observed in any transect.</li> <li>• Some areas of seafloor were relatively bare while others included a low (~5%) to high (~80%) density cover of benthic organisms. This benthic cover changed continually and often (within m's) over each transect. Benthic fauna comprised a diverse array of sponges and corals with varying forms, sizes and colours. Hydroids and cnidarians were also apparent on occasion.</li> <li>• Bioturbation of the seafloor in the form of small cones, craters, burrows, small and large trails was also apparent. Mobile organisms including fish, echinoderms and jellies, were also noted on the videos.</li> </ul>
3	<ul style="list-style-type: none"> <li>• The seafloor in Area 3 was relatively flat and sandy with a light to high cover of biogenic gravel and/or organic material over its entire length (continually changing). Small undulations of the seabed and some small sand waves were present on occasion, but no other regular bedforms such as sand ripples or sand waves were apparent.</li> <li>• No significant moderate or high relief habitat features were observed on the video or can be seen on the transect maps with detailed bathymetry. Any features seen are in the order of ~1 m and occur over relatively large scales.</li> <li>• The seabed was a mosaic of bare substrate and low (~5%) to high (~75%) density cover of benthic organisms (e.g. sponges, corals). Benthic fauna comprised a diverse array of sponges and corals with varying forms, sizes and colours. Hydroids and cnidarians were also apparent on occasion along the transect length.</li> <li>• Bioturbation of the seafloor in the form of small cones, craters, burrows and small and large trails was apparent. Mobile organisms including fish, echinoderms and jellies, were also noted on the videos. Fish fauna diversity was quite high, and varying sizes of fish were seen amongst the aggregations of corals and sponges and also over bare sandy seafloor.</li> </ul>

Survey Area	Summary
4	<ul style="list-style-type: none"> <li>• The seafloor within Area 4 was typically flat sand with a high level of biogenic gravel of unknown origin. Small mounds, waves and undulations all &lt; 50 cm in height were seen on occasion and mainly occurred around aggregations of benthic epifauna (i.e. sponges and corals).</li> <li>• No significant moderate or high relief features, or significant areas of consolidated hard substrate, were present in Area 4 as could be seen on the video or transect maps.</li> <li>• The seafloor in Area 4 was scattered with sponges and corals of varying forms and sizes; occurring as individuals with a low-density cover (~5%) up to more dense clusters (~50%). Other benthic epifauna included echinoderms (e.g. feather stars) and cnidaria (e.g. seapens). Mobile fauna (mainly small bony fishes) were most common around the larger clusters of sponges and corals.</li> <li>• Areas of bare sand were present amongst the patches of epifauna; and the switch between bare sand to benthic cover changed constantly and over short distances.</li> <li>• Bioturbation of the seafloor in the form of small mounds and craters was evident along the entire transect length.</li> </ul>
5	<ul style="list-style-type: none"> <li>• The seafloor consisted of flat sand, often with an organic cover (likely bacterial or algae) or a biogenic gravel component. The seafloor showed some slight undulation in places and scour marks commonly occurred around small 'clusters' of benthic epifauna (i.e. sponges and corals). No regular bedforms such as sand ripples or sand waves were present.</li> <li>• No significant moderate or high relief features were present.</li> <li>• Benthic epifauna occurred sporadically along the entire transect length and generally occurred as diverse 'clusters' of sponges and corals. These organisms were often large and were very diverse in form. The percentage cover of benthic organisms ranged from 5% to ~40%.</li> <li>• Mobile fauna were common around these clumps of sponges and corals; including echinoderms (e.g. sea stars, feather stars and sea cucumbers) and small bony fishes.</li> <li>• Bioturbation of the seafloor was common over the entire transect length and usually occurred in the form of thin trails, small mounds or craters.</li> </ul>



**Figure 4-5: Example of ROV footage from the benthic habitat survey of the trunkline corridor within the Montebello Marine Park (photos selected from near the trunkline route)**

**KP 192 to Continental Slope:** From KP 192 to the continental slope the seabed is generally featureless. Epifauna was most abundant on the continental shelf compared to the slope and the abundance of the fauna appeared to be inversely associated with depth, with distinct differences in the fauna on the shelf and slope. The assessment of the offshore habitats that occur on the continental shelf (<300 m water depth), have been based on ROV footage collected as part of subsea facility inspections around the Pluto field within Permit Area WA-34-L and WA-48-L. While the Pluto platform itself is located within WA-48-L, in 83 m water depth, much of the subsea infrastructure including pipelines and wellheads are in WA-34-L in ~190 m water depth. The seabed composition through these areas has been previously described as being predominantly flat and featureless and comprises thick, unconsolidated fine-grained sands. The sediments support soft sediment benthic communities dominated by infauna (including molluscs, crustaceans and worms) and isolated larger fauna (free swimming cnidarian, demersal fish and benthic crustaceans). Interestingly, the habitats containing the greatest biodiversity in these offshore environments are the habitats formed by colonising invertebrates on oil and gas subsea infrastructure including the well heads and pipelines. These habitats and the species present on these structures in the NWS of Western Australia have been recently subject to detailed quantitative and qualitative assessment (McLean et al., 2017, 2018, 2020 Bond et al., 2018a, b).

The bathymetry of the seabed increases in complexity over the continental slope and thus additional survey data has been collected over this area (Figure 4-6 and Figure 4-7). The only natural habitat on the continental slope that is not classified as soft sediment is the rock pinnacle field that lies in about 300 m water depth, approximately 360 m south of the closest part of the trunkline route (KP206) and ~3 km from the continental slope cross seabed preparation activity. Investigations in the vicinity of the pinnacle field covered an area about 1 km long x 4 km wide (Figure 4-7), but the pinnacles are isolated forms restricted to an area about 100 m long x 75 m wide, and do not constitute continuous reef. The structures provide habitat for a diverse range of epifaunal and demersal species that commonly occur across the NWMR, including a very low percentage cover of soft coral growing on top of the pinnacles.

**Deep Continental Slope to PLET:** Regional and site-specific studies reviewed as part of a desk top study for the OPP indicate that seabed material along the proposed Trunkline Project Area in deeper waters (and around the PLET location) is predominantly flat and featureless and comprises thick, unconsolidated fine-grained sands (Geoconsult, 2005, SKM, 2006, ERM, 2013). The low energy, soft bottom seafloor is expected to support sparse marine fauna as reported for the Exmouth Plateau. Sediments are calcareous, fine-grained and low in nutrients. Benthic communities are dominated by motile organisms, including shrimp, sea cucumbers, demersal fish and small, burrowing worms and crustaceans. No threatened species/ecological communities or migratory species were identified in previous studies (as defined under the EPBC Act).

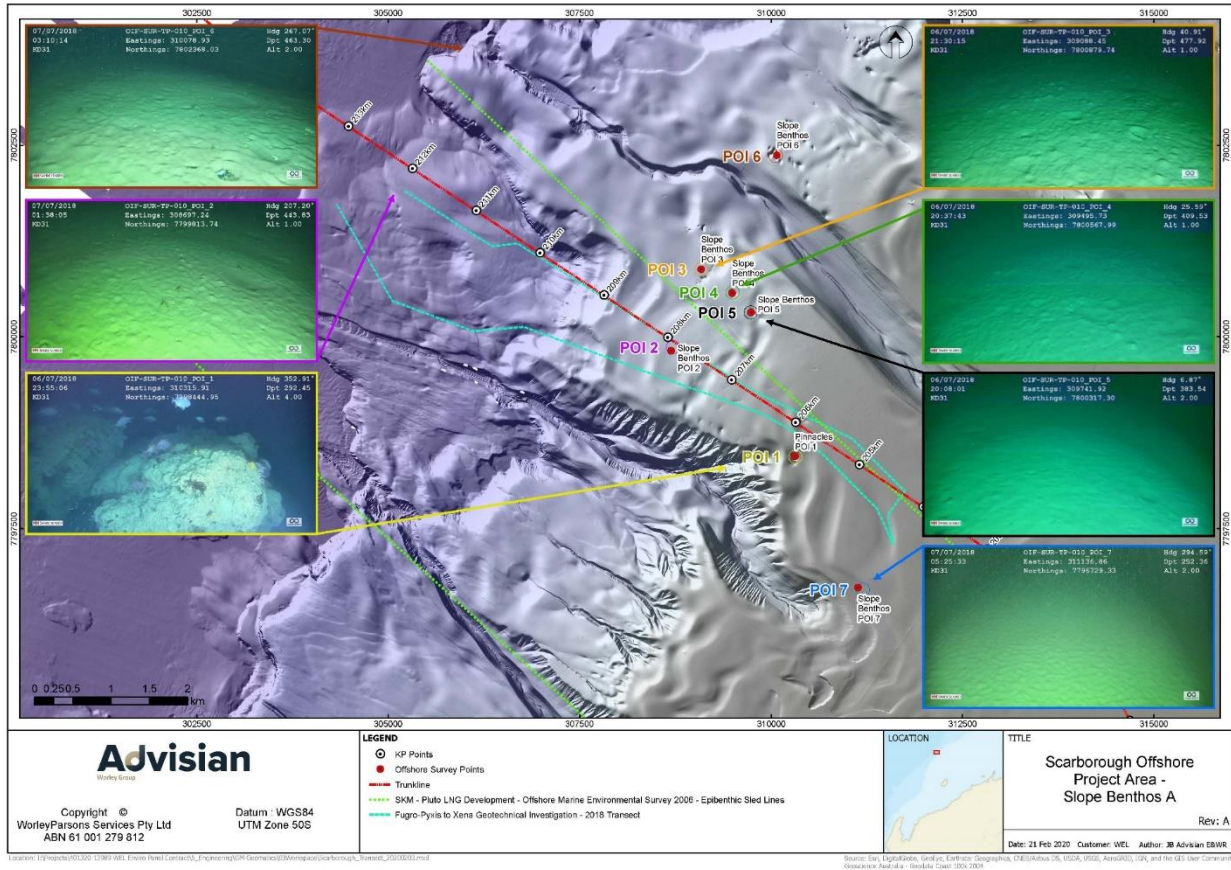
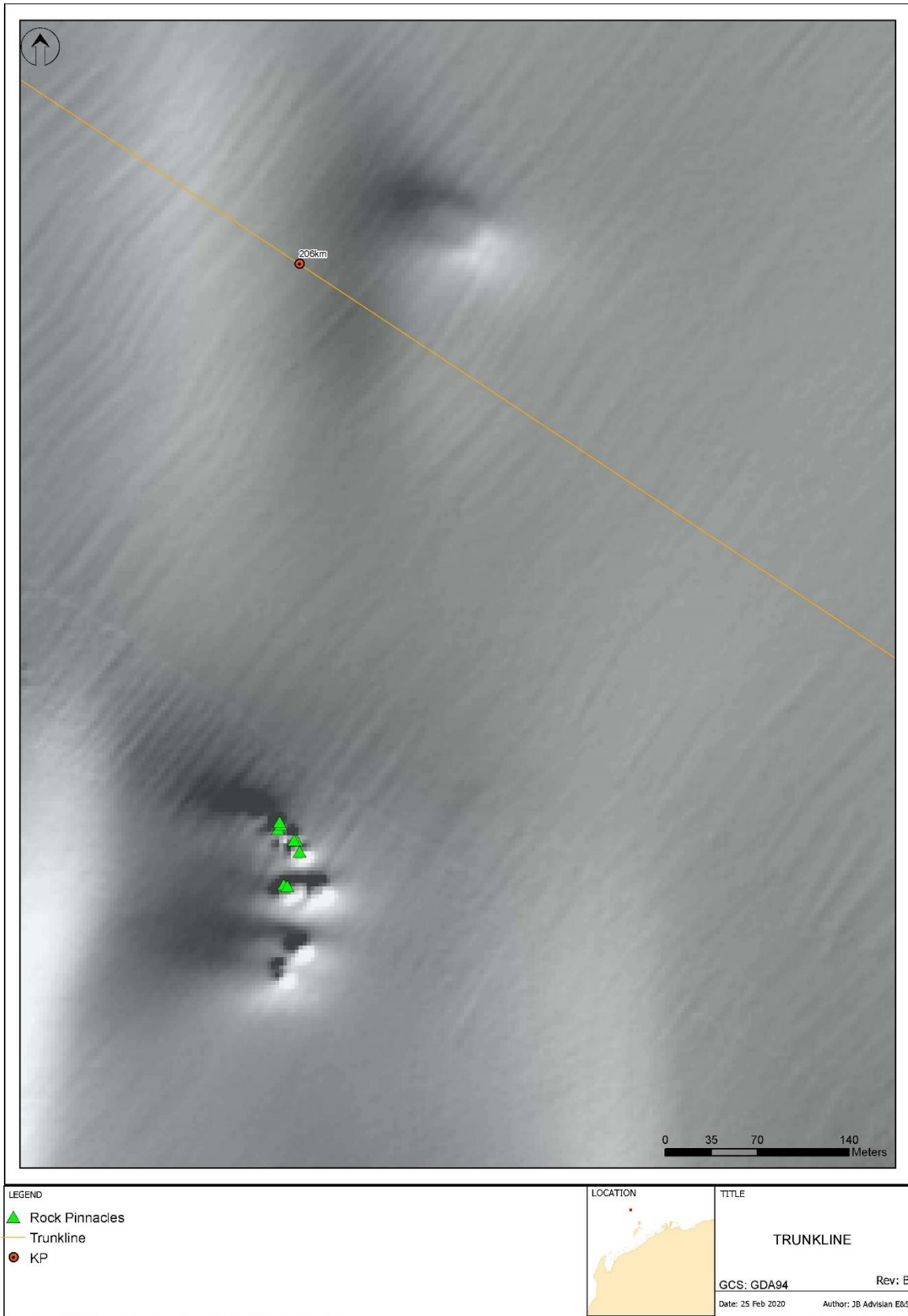


Figure 4-6: North West Shelf and Continental Slope Survey Sites Along the Trunkline Route





**Figure 4-7: Distribution of Pinnacles in Proximity to the Trunkline Route**

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### 4.5.3 Shoreline and Coastal Habitats

Coastal and shoreline habitats do not occur in the Trunkline Project Area, nor the Offshore Borrow Ground Project Area; however, they occur within the EMBA and are discussed briefly below.

The shoreline of the NWMR features tidal flats, sandy beaches and rocky shores, often exposed to high tidal variation. Coastal habitats that occur on the coastline within the EMBA include saltmarshes and mangroves around the Dampier Archipelago (Table 4-1, Appendix H).

Key habitats and ecological communities within the EMBA are identified in Table 4-6 and described in Appendix H and the Scarborough OPP.

### 4.5.4 Marine Fauna

The Dampier Archipelago hosts over 650 species of fish, including sawfishes, sharks, rays, as well as a wide range of marine mammals, reptiles and seabirds. The benthic and pelagic fish communities of this region are highly depth dependent, and several fish biodiversity hotspots have been identified. Inner shelf species include lizardfishes, goatfishes, trevally, angelfishes and tuskfishes. Deeper water species include deep goatfishes, threadfin bream and lizardfishes, ponyfishes, billfishes and tuna. The region also supports a number of commercial fish species including snapper, emperor, Rankin cod and bream. Resident marine mammals of the NWMR typically reside in shallower coastal waters, including bottlenose and Indo-Pacific humpback dolphins and dugongs, as well as extensive critical and biologically important habitats for marine turtles. Migratory species through the region are predominately whales and seabirds or shorebirds.

The Operational Area and wider EMBA are typically representative of the wider region. Biodiversity hotspots within the EMBA include Glomar Shoal, the outer islands of the Dampier Archipelago and the sheltered waters of Shark Bay. Table 4-6 summarises the habitats and biological communities within the EMBA, which are further detailed in Section 4.4 of Appendix H and the Scarborough OPP.

**Table 4-6: Habitats and communities within the Operational Area, Zone of Influence and EMBA**

Habitat/Community	Operational Area	Zone of Influence	EMBA
<b>Habitats</b>			
Coral	✓	✓	✓
Seagrass beds and macroalgae	-	-	✓
Mangroves	-	-	✓
Saltmarsh	-	-	✓
<b>Communities</b>			
Plankton	Representative of the wider NWMR, with increased abundance associated with increased primary production at the 300 m isobath on the shelf edge.		
Marine fauna	Fish biodiversity associated with benthic habitat. Typical of the NWMR, including migratory cetaceans and seabirds, resident populations of marine turtles, seabirds and shorebirds and dolphins.		
Epifauna	Generally sparse communities of soft corals, sponges, ascidians, octocorals and invertebrates. Areas of hard substrate (i.e., rock pinnacles) may feature high biodiversity of sessile epifauna by providing attachment points.	Sparse communities of sponges, anemones, crinoids, soft corals and ascidians. Some incursion into areas of higher biodiversity during winter conditions.	Predominately sparse mobile epifauna (i.e., arthropods and echinoderms) and sessile filter feeders (sponges, soft corals etc.). Increased biodiversity in nearshore fringing reefs, offshore islands and regionally significant shoals includes crustaceans, site-attached

Habitat/Community	Operational Area	Zone of Influence	EMBA
			fish, sponges, soft corals and other invertebrates.
Infauna	Bioturbating infauna, polychaetes and annelids found in areas of soft sediments.		

#### 4.6 Protected Species

A total of 81 EPBC Act listed species considered to be MNES were identified as potentially occurring within the EMBA, of which 49 species were identified as potentially occurring within the Operational Area. Several species considered to be MNES were not included (e.g., terrestrial species occurring within the EMBA); however, species for which coastal and shoreline environments were a dominant habitat were included. The full list of marine species identified in PMST reports is provided in Appendix C.

Two conservation dependent species have also been identified with a potential to occur within the Operational Area; the scalloped hammerhead shark and the southern bluefin tuna. Species identified as potentially occurring within the Operational Area and EMBA and Biologically Important Areas (BIAs) or Habitat Critical to their Survival (Habitat Critical) that overlap the Operational Area and EMBA are listed in Table 4-7 to, and a description of species is included in Appendix H and the Scarborough OPP. Figure 4-8 to show the spatial overlap with relevant BIAs and Habitat Critical areas and the Operational Area and EMBA.



### 4.6.1 Fish, Sharks and Rays

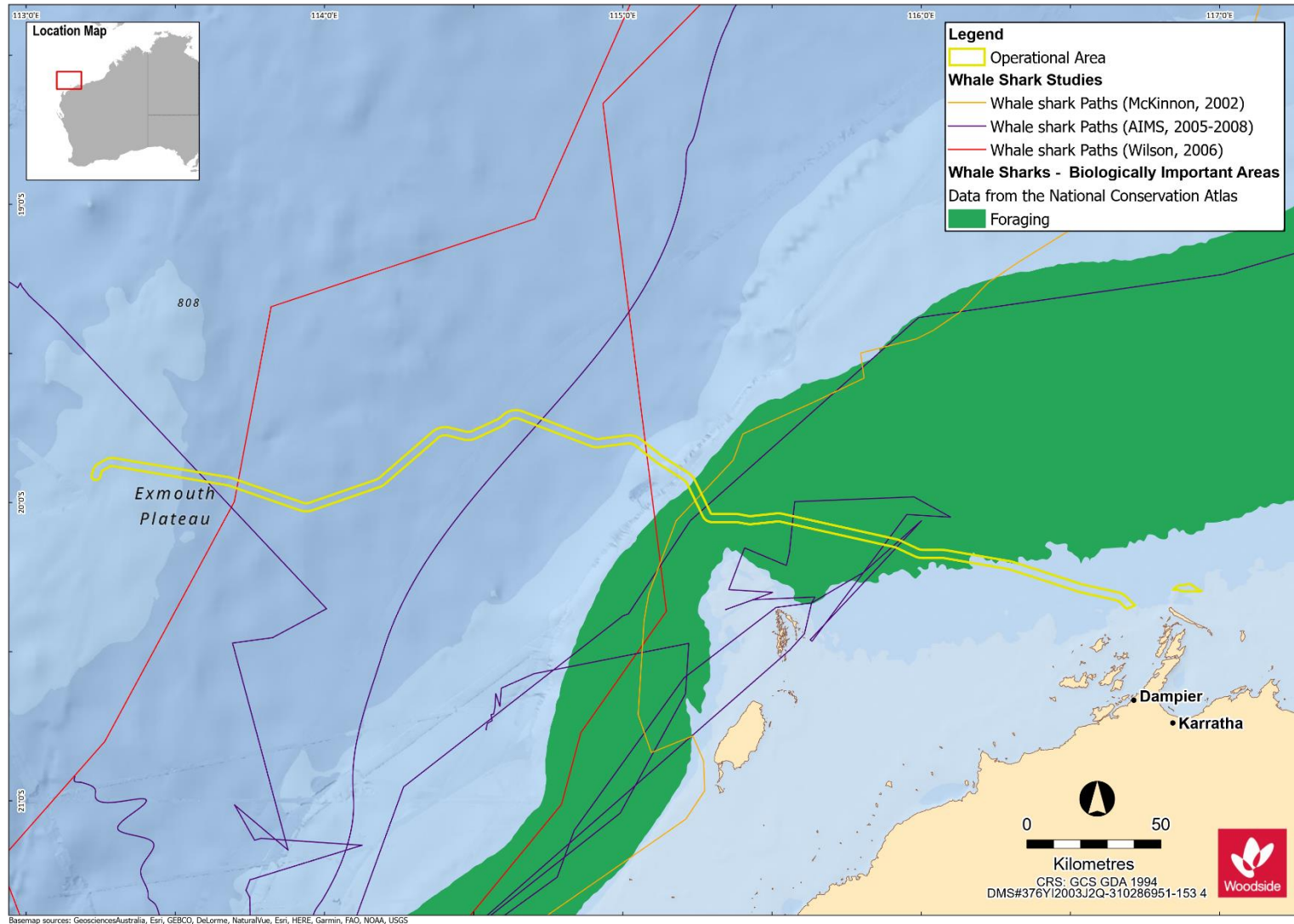
Table 4-7: Threatened and Migratory fish, shark and ray species predicted to occur within the Operational Area and EMBA

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	EMBA
<i>Anoxypristis cuspidata</i>	Narrow Sawfish	N/A	Migratory	✓	✓
<i>Carcharias taurus</i>	Grey nurse shark (West coast population)	Vulnerable	N/A	✓	✓
<i>Carcharhinus longimanus</i>	Oceanic whitetip shark	Vulnerable	Migratory	✓	✓
<i>Carcharodon carcharias</i>	White shark	Vulnerable	Migratory	✓	✓
<i>Isurus oxyrinchus</i>	Shortfin mako	N/A	Migratory	✓	✓
<i>Isurus paucus</i>	Longfin mako	N/A	Migratory	✓	✓
<i>Lamna nasus</i>	Mackerel shark	N/A	Migratory	x	✓
<i>Manta alfredi</i>	Reef manta ray	N/A	Migratory	✓	✓
<i>Manta birostris</i>	Giant manta ray	N/A	Migratory	✓	✓
<i>Pristis clavata</i>	Dwarf sawfish	Vulnerable	Migratory	✓	✓
<i>Pristis zijsron</i>	Green sawfish	Vulnerable	Migratory	✓	✓
<i>Pristis</i>	Freshwater sawfish	Vulnerable	Migratory	✓	✓
<i>Rhincodon typus</i>	Whale shark	Vulnerable	Migratory	✓	✓

Table 4-8: Fish, shark and ray BIAs within the Operational Area and EMBA

Species	BIA type	Approximate distance and direction of BIA from Operational Area (km)
Whale shark	Foraging (northward from Ningaloo along 200 m isobath)	Overlaps Operational Area between about KP 72 and KP 199. Overlaps EMBA to the east
	Foraging (high density prey)	Overlaps EMBA along the Ningaloo coastline.

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**Figure 4-8: Whale shark BIAs overlapping the Operational Area and satellite tracks of whale sharks tagged between 2005 and 2008 (McKinnon, 2002; AIMS, 2005-2008; Wilson, 2006)**

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## 4.6.2 Marine Reptiles

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	EMBA
<i>Aipysurus apraefrontalis</i>	Short-nosed seasnake	Critically Endangered	N/A	✓	✓
<i>Aipysurus foliosquama</i>	Leaf-scaled seasnake	Critically Endangered	N/A	✓	✓
<i>Caretta</i>	Loggerhead turtle	Endangered	Migratory	✓	✓
<i>Chelonia mydas</i>	Green turtle	Vulnerable	Migratory	✓	✓
<i>Dermochelys coriacea</i>	Leatherback turtle	Endangered	Migratory	✓	✓
<i>Eretmochelys imbricata</i>	Hawksbill turtle	Vulnerable	Migratory	✓	✓
<i>Natator depressus</i>	Flatback turtle	Vulnerable	Migratory	✓	✓

**Table 4-10: Marine turtle BIAs within the Operational Area and EMBA**

Species	BIA type	Approximate distance and direction of BIA from Operational Area (km)
Flatback turtle	Interesting (Thevenard Island, Montebello Islands, Dampier Archipelago)	Overlaps Operational Area between about KP 32 and KP 199.
	Nesting (Thevenard Island, Barrow Island, Montebello Islands, Legendre Island, Hauy Island)	Overlaps EMBA in several places. Occurs ~29 km south of KP 145, 9 km south of Offshore Borrow Ground Project Area.
	Mating (Barrow Island, Montebello Islands)	Occurs within EMBA, ~29 km south of KP 145, around Montebello Islands and Barrow Island.
	Foraging (Barrow Island, Legendre Island, Hauy Island)	Overlaps with EMBA in several places. Occurs ~65 km south of KP 145, around Barrow Island, 9 km south of Offshore Borrow Ground Project Area.
Green turtle	Interesting (North West Cape, Muiron Islands, Montebello Islands, Barrow Island)	Overlaps Trunkline Project Area at KP 32 – KP 50, and Offshore Borrow Ground Project Area. Also occurs within the EMBA around the Montebello Islands (~5 km south of KP 149), Barrow Island (~44 km south of KP 149) and around offshore fringing islands from Dampier Archipelago to Cape Range.

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Species	BIA type	Approximate distance and direction of BIA from Operational Area (km)
	Nesting (North West Cape)	Overlaps EMBA around the offshore fringing islands from Dampier Archipelago to Cape Range, ~10 km east of KP 32 at closest point and around Montebello Islands and Barrow Island (~25 km south of KP 149).
	Foraging (North West Cape, Dixon Island, Montebello Islands, Barrow Island)	Overlaps EMBA around the offshore fringing islands from Dampier Archipelago to Cape Range, ~10 km east of KP 32 at closest point and around Montebello Islands and Barrow Island (~25 km south of KP 149). Foraging BIA ~182 km north-east is highlighted as unique to WA.
	Mating (Dampier Archipelago, Montebello Islands, Barrow Island)	Overlaps EMBA around the offshore fringing islands from Dampier Archipelago, ~10 km east of KP 32 at closest point and around Montebello Islands and Barrow Island (~25 km south of KP 149).
	Basking (Barrow Island)	Overlaps EMBA on the west coast of Barrow Island (~44 km south of KP 149).
	Aggregation (Middle and North Mangrove Island, Montebello Islands)	Overlaps EMBA, closest point is ~41 km south of KP 160.
Hawksbill turtle	Interesting (Ningaloo coast and Jurabi coast <sup>1</sup> , Thevenard Island, Barrow Island, Lowendal Islands, Montebello Islands, Varanus Island)	Overlaps Trunkline Project Area from KP 32 to ~KP 53 and Offshore Borrow Ground Project Area. Overlaps EMBA at Montebello Islands and Barrow Island ~10 km south of KP 160, Thevenard Island (~131 km south of KP 180), and Cape Range (~202 km south of KP 180).
	Nesting (Ningaloo coast and Jurabi coast, Thevenard Island, Barrow Island, Varanus Island, Lowendal Islands, Dixon Island)	Overlaps EMBA around the offshore fringing islands from Dampier Archipelago, ~10 km east of KP 32 to Cape Range, Montebello Islands (~30 km south of KP 160), Barrow Island (~64 km south of KP 160).
	Foraging (De Grey River to Bedout Island, Burrup Peninsula, Cape Preston to Onslow, Dixon Island)	Overlaps EMBA at Burrup Peninsula (~10 km east of KP 32) to Onslow, Montebello Islands and Barrow Island (~30 km south of KP 160 at closest point), De Grey River to Bedout Island BIA, ~185 km north-east of Offshore Borrow Ground Project Area, is key foraging ground for all 4 species.
	Mating (Burrup Peninsular, Montebello Islands, Barrow Island)	Overlaps EMBA at Burrup Peninsula (~10 km east of KP 32), Montebello Islands and Barrow Island (~30 km south of KP 160 at closest point).
	Migration corridor (Burrup Peninsular)	Overlaps EMBA around Burrup Peninsula (~10 km east of KP 32).
Loggerhead turtle	Interesting (Ningaloo coast and Jurabi coast, Muiron Islands, Gnaraloo Bay, Montebello Islands, Lowendal Island, Dirk Hartog Island)	Overlaps Operational Area at KP 32 – KP 52. Overlaps the EMBA at ~19 km south of KP 160, surrounding the Montebello Islands and ~186 km south of KP 160 on the Ningaloo coast.

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Species	BIA type	Approximate distance and direction of BIA from Operational Area (km)
	Nesting (Ningaloo coast and Jurabi coast, Muiron Islands, Gnaraloo Bay, Montebello Islands, Lowendal Island, Dirk Hartog Island, Cohen Island)	Overlaps the EMBA ~237 km south of KP 160 on the Ningaloo coast. Cohen Island BIA is ~10 km from KP 32.
	Foraging (De Grey River to Bedout Island)	De Grey River to Bedout Island BIA, ~185 km north-east of Offshore Borrow Ground Project Area, is key foraging ground for all 4 species.

**Table 4-11: Habitat Critical to the survival of marine turtle species predicted to occur within the Operational Area and EMBA**

Species	Genetic Stock	Nesting Locations	Approximate distance and direction from Operational Area (km)	Inter-nesting buffer	Nesting period	Hatching period
Green turtle	North West Shelf	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	Overlaps Operational Area	20 km	Nov–Mar (peak: Dec-Feb)	Jan–May (peak: Feb–Mar)
Flatback turtle	Pilbara	Montebello Islands, Mundabullangana Beach, Barrow Island, Cemetery Beach, Dampier Archipelago (including Delambre Island and Huay Island), coastal islands from Cape Preston to Locker Island	Overlaps Operational Area	60 km	Oct–Mar (peak: Nov-Jan)	Feb–Mar
Hawksbill turtle	Western Australia	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	Overlaps Operational Area	20 km	All year (peak: Oct–Feb)	All year (peak: Dec–Feb)
Loggerhead turtle	Western Australia	Exmouth Gulf and Ningaloo coast, Gnaraloo Bay and beaches	~200 km south-east of KP 180	20 km	Nov–Mar (peak: Jan)	Jan-May
Leatherback turtle	No overlap – nesting located in Northern Territory and North Queensland					
Olive Ridley turtle	No overlap – nesting located in Northern Australia and North Queensland					

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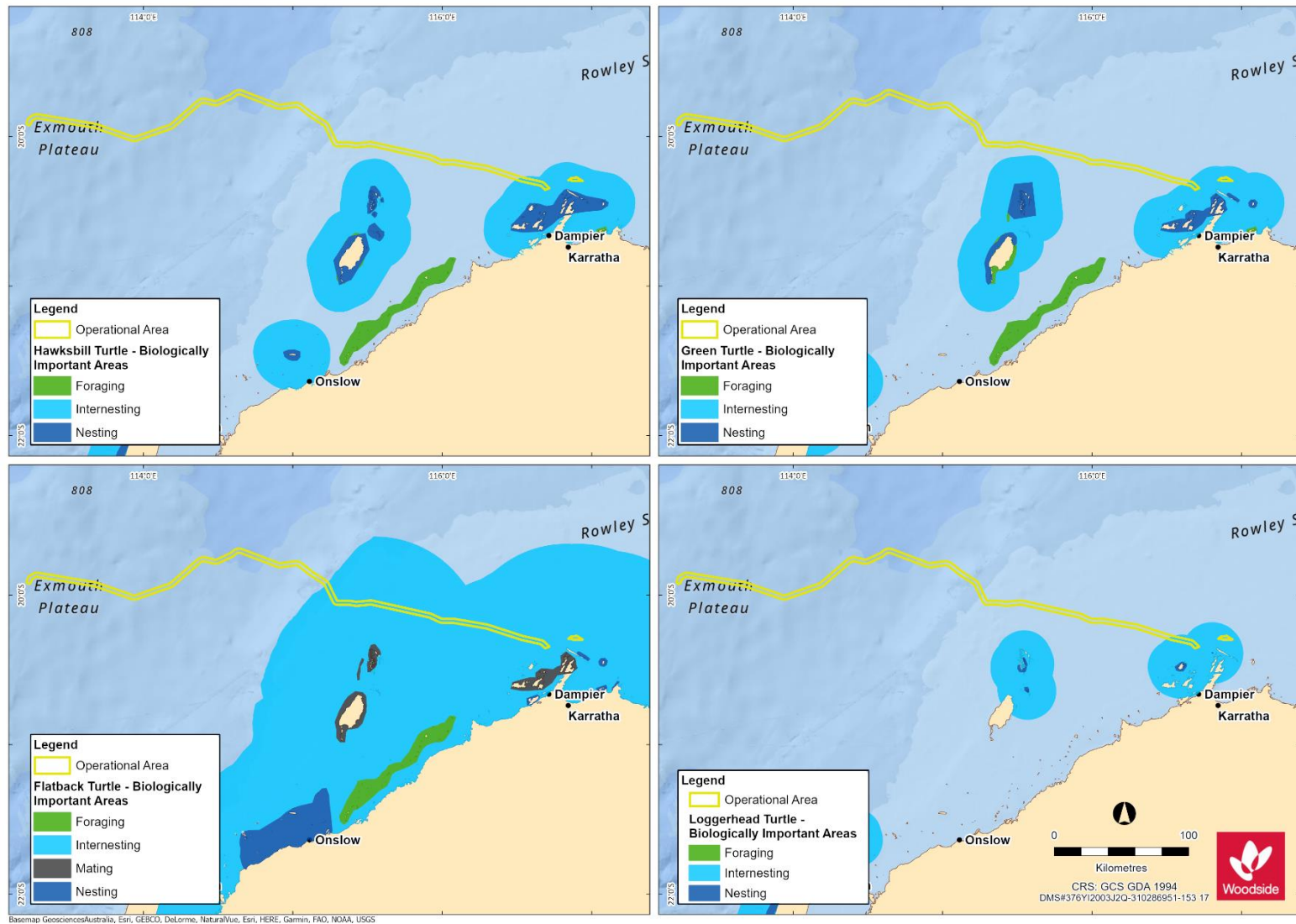
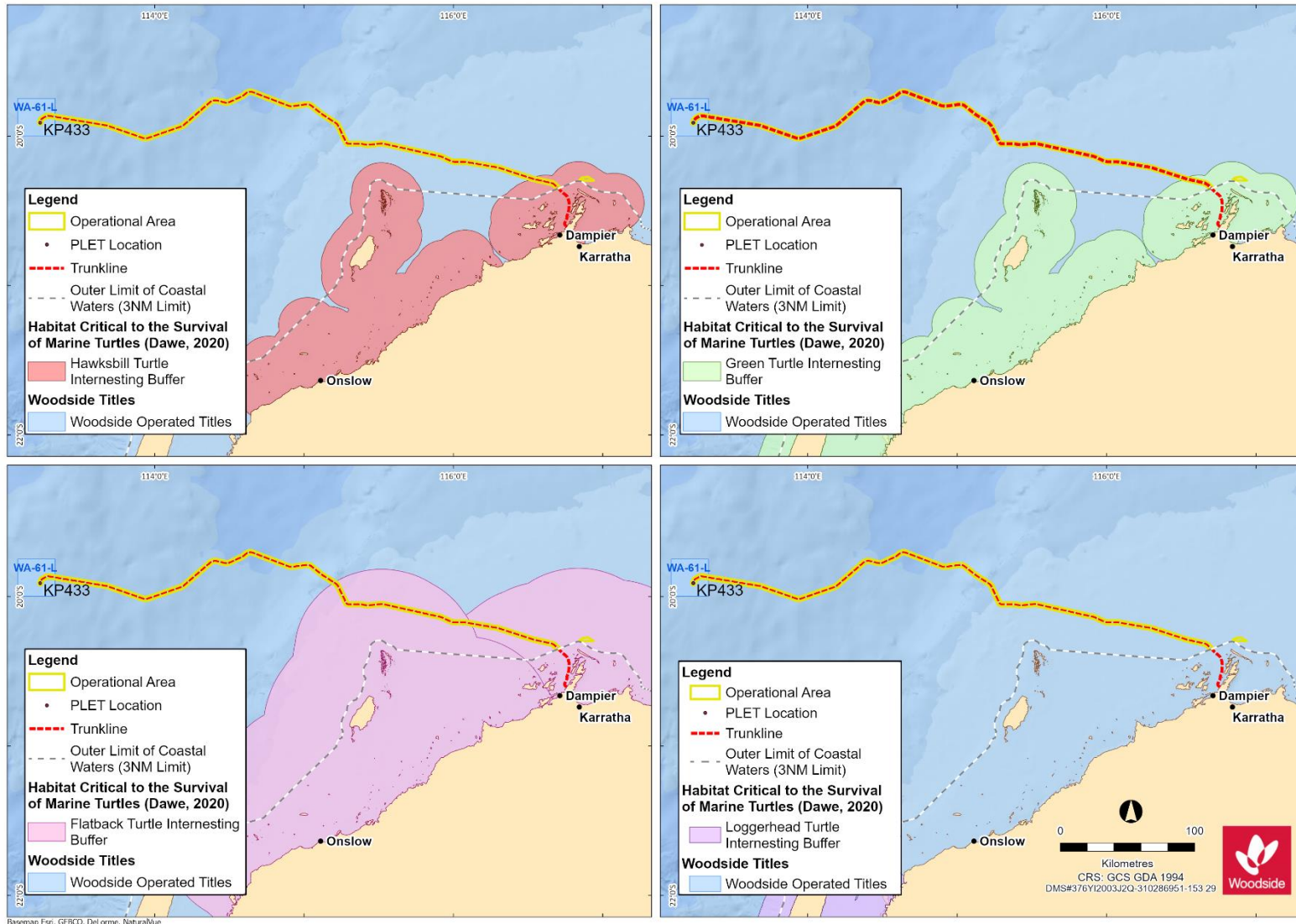


Figure 4-9: Marine turtle BIAs overlapping and in proximity to the Operational Area

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**Figure 4-10: Habitat Critical to the survival of marine turtles in proximity to the Operational Area**

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The closest known turtle nesting beaches to the Trunkline and Borrow Ground Project Areas are the islands of the Dampier Archipelago. Beaches of the Dampier Archipelago, where marine turtle nesting are summarised in Table 4-13. Rosemary Island has the most significant nesting beaches, determined as mean number of hawksbill, green and flatback turtle tracks per day (Pendoley et al., 2016) and is recognised as an internationally significant rookery for hawksbill turtles, with one of the largest nesting populations in Australia and globally (Limpus, 2009). On Rosemary Island, the majority of hawksbill nesting occurs on the north-western beaches (K. Pendoley, pers. comm.) with lower density flatback and green nesting occurring at beaches on the eastern end of the Island. Seasonality of nesting differs between flatback, green and hawksbill turtles; Table 4-12 provides a summary of the key seasonal sensitivities for protected marine reptile species identified as occurring within the Operational Area. A study by Whiting (2018) provides defined seasonality specific nesting data for Rosemary Island, and found that hawksbill turtles have a much earlier peak (October/November) compared to flatback turtles (December/January). Seasonality for green turtles was not well defined from the available data (Whiting, 2018). Given the discrete duration of surveys at Legendre Island (Biota, 2009), insufficient data is available to refine seasonality for this location.

CALM (1990) reports loggerhead turtle nesting activity on Cohen Island however, Pendoley et al. (2016) did not find evidence of loggerhead nesting activity over 20 years of track data. The northernmost key loggerhead nesting areas include the North West Cape and Muiron Islands. Any nesting activity by loggerhead turtles in the Dampier Archipelago will not represent significant rookeries for this species (PENV, 2020a). No major leatherback turtle rookeries are known to occur in Australia, with scattered nesting reported in Queensland (Limpus and MacLachlan, 1979, 1994; Limpus et al., 1984) and the Northern Territory (Hamann et al., 2006; Limpus and MacLachlan, 1994) only.



**Table 4-12: Records of nesting behaviour of green, flatback and hawksbill turtles on islands of the Dampier Archipelago (CALM, 1990; Pendoley et al., 2016; Biota, 2009)**

	Angel	Burru Peninsula	Conzinc	Delambre	Dolphin	Eaglehawk	East Goodwyn	East Intercourse	Elphick Nob	Enderby	Hauy	Intercourse	Keast	Lady Nora	Legendre	Rosemary	West Intercourse	West Mid Intercourse	
Trunkline Project Area distance (km)	17	22	22	38	17	41	25	32	14	27	27	34	13	12	12	14	36	35	
Borrow ground Project Area distance (km)	21	26	28	20	16	57	41	42	32	43	14	45	10	28	6.6	40	48	46	
Flatback	X	X	X	M	X	L	X	X	X	M	X	X	X	X	L	M	X	X	
Green	-	X	-	L	X	L	-	X	-	L	X	-	-	-	X	M	X	-	
Hawksbill	L	-	-	L	-	L	X	-	X	M	-	-	-	-	X	H	-	-	
<b>Key</b>																			
	Island is within 20 km of the Project Areas plus nesting at 'Low' or above																		
	Island is within 20 km of the Project Areas, but nesting is less than 'Low'																		
	Island is more than 20 km from Project Areas																		
-	Absent																		
X	Present																		
L	Low: 1 – 10 tracks per day																		
M	Moderate: 11 – 100 tracks per day																		
H	High: 101 – 500 tracks per day																		

### 4.6.3 Marine Mammals

**Table 4-13: Threatened and Migratory marine mammal species predicted to occur within the Operational Area and EMBA**

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	EMBA
<i>Balaenoptera bonaerensis</i>	Antarctic minke whale	N/A	Migratory	✓	✓
<i>Balaenoptera borealis</i>	Sei whale	Vulnerable	Migratory	✓	✓
<i>Balaenoptera edeni</i>	Bryde's whale	N/A	Migratory	✓	✓
<i>Balaenoptera musculus</i>	Blue whale	Endangered	Migratory	✓	✓
<i>Balaenoptera physalus</i>	Fin whale	Vulnerable	Migratory	✓	✓
<i>Eubalaena australis</i>	Southern right whale	Endangered	Migratory	x	✓
<i>Dugong dugon</i>	Dugong	N/A	Migratory	✓	✓
<i>Megaptera novaeangliae</i>	Humpback whale	N/A	Migratory	✓	✓
<i>Orcaella heinsohni</i>	Australian Snubfin Dolphin	N/A	Migratory	✓	✓
<i>Orcinus orca</i>	Killer whale	N/A	Migratory	✓	✓
<i>Physeter macrocephalus</i>	Sperm whale	N/A	Migratory	✓	✓
<i>Sousa sahalensis</i> ( <i>Sousa chinensis</i> )	Australian humpback dolphin	N/A	Migratory	✓	✓
<i>Tursiops aduncus</i>	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	N/A	Migratory	✓	✓

*It is noted that all Commonwealth waters are designated as the Australian Whale Sanctuary.*

**Table 4-14: Marine mammal BIAs within the Operational Area and EMBA**

Species	BIA type	Approximate distance and direction from Operational Area (km)
Dugong	Breeding, nursing, calving (Exmouth Gulf and Ningaloo Reef year round).	Overlaps EMBA
	Foraging high density seagrass beds (Exmouth Gulf and Ningaloo Reef year round)	
Pygmy blue whale	Migration (Augusta to Derby, tend to pass along the shelf edge at depths of 500 m to 1000 m; appear close to coast in the Exmouth-Montebello Islands area on southern migration) Figure 4-12 (Migration timing is provided in Table 4-18)	Overlaps Trunkline Project Area between ~KP 200 and ~KP 374. Overlaps EMBA in north-east to south-west direction
	Possible Foraging (Ningaloo coast)	Overlaps EMBA
Humpback whale	Migration	Overlaps Trunkline Project Area between ~KP 32 and ~KP 145. Extends through EMBA in north-east to south-west direction out to ~100 km offshore. From North West Cape to south of Shark Bay the migration corridor is reduced to ~50 km in width
	Resting Exmouth Gulf for migration north and south)	Overlaps EMBA

**4.6.3.1 Pygmy Blue Whale**

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) (Commonwealth of Australia, 2015) and the National Conservation Values Atlas (NCVA) (Figure 4-11). The foraging areas correspond to blue whale Biologically Important Areas (BIAs) based on foraging of varying density and likelihood and the NCVA also includes an area of offshore waters in Western Australia that represents the migratory corridor or Migratory BIA for pygmy blue whales, refer to Figure 4-12.

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 4-12. 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 4-12. The area the whales have been shown to fan out and migrate beyond the BIA (Thums et al. (2022) is north of the Operational Area. Two southbound tracked whales also travelled predominantly within the migration BIA (refer to Figure 4-12).

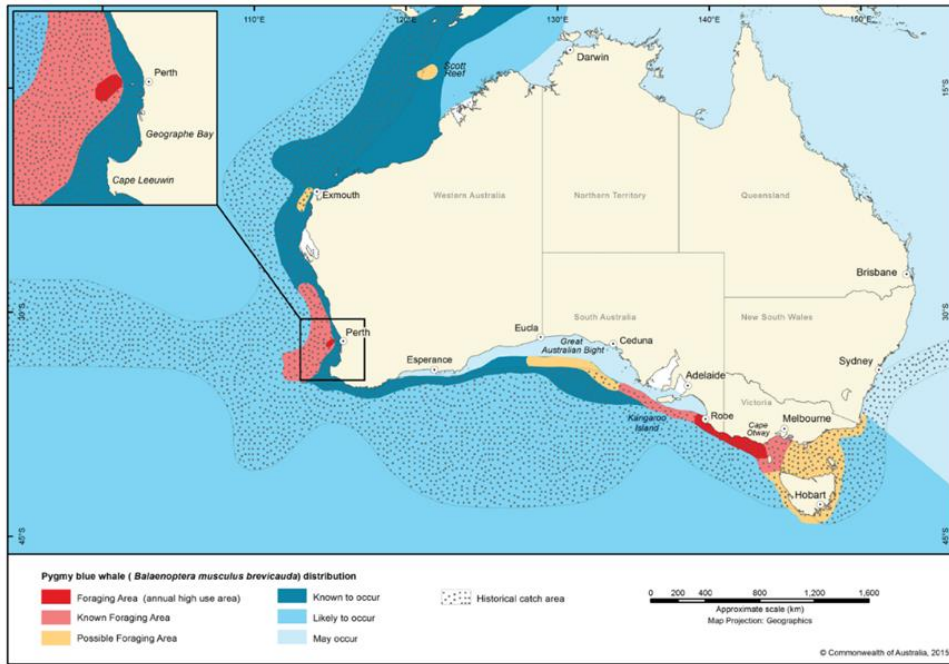
The pygmy blue whale distribution range is a spatially defined area representing presence certainty and not biologically important behaviour (e.g. breeding, foraging, migration), where pygmy blue whales are known to occur based on direct observations, satellite tagged whales or based on

acoustic detections (Commonwealth of Australia, 2015). The distribution range acknowledges the migratory movement of pygmy blue whales to the west of the Migratory BIA.

The Operational Area for the Petroleum Activities Program intersects the pygmy blue whale migration BIA (from KP200km to KP274), and also overlaps with the broader pygmy blue whale distribution range (refer to Figure 4-12). Considering this overlap, as well as the recorded presence and satellite tracking of both north and south bound tagged individuals in the Operational Area (Thums et al. (2022), it is likely that transient individuals or small groups are occasionally in and around the Operational Area during migratory north and south seasons (April to July and October to January, respectively) (McCauley, 2011; Gavrilov et al., 2018; Thums et al., 2022). Significant numbers of pygmy blue whales are not expected to be encountered, particularly outside peak periods for northbound or southbound migrations (Figure 4-11).

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  $2.8 \pm 0.8 \text{ km hr}^{-1}$ ) 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.

There are limited data to indicate that the area of the Exmouth Plateau overlapped by the Operational Area (Figure 4-15) represents an area where opportunistic foraging by pygmy blue whales occurs regularly. Based on an overlap of three different metrics (occupancy, number of whales in a cell and move persistence) Thums et al. (2022) identified the most important foraging areas for pygmy blue whales is in offshore waters for north-west Australia. This included the area of the shelf edge from Ningaloo Reef to the Rowley Shoals, but this foraging area does not appear to extend out to the central portion of the Exmouth Plateau where the Operational Area is located.



<b>Foraging Area (Annual high use area)</b>	Blue whales are regularly observed feeding on a seasonal basis	<b>Known to occur</b>	Blue whales are known to occur based on direct observations, satellite tagged whales or based on acoustic detections
<b>Known Foraging Area</b>	Known foraging occurs in these areas but is highly variable both between and within seasons	<b>Likely to occur</b>	Blue whales are likely to occur based on occasional observations in the area and nearby areas
<b>Possible Foraging Area</b>	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	<b>May occur</b>	Evidence for the presence of blue whales through strandings or rare observations
		<b>Historical catch area</b>	Blue whales were caught during the whaling period based on whaling data

**Figure 4-11: Important foraging and areas of occurrence for pygmy blue whales as presented in the Blue Whale Conservation Management Plan (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.**



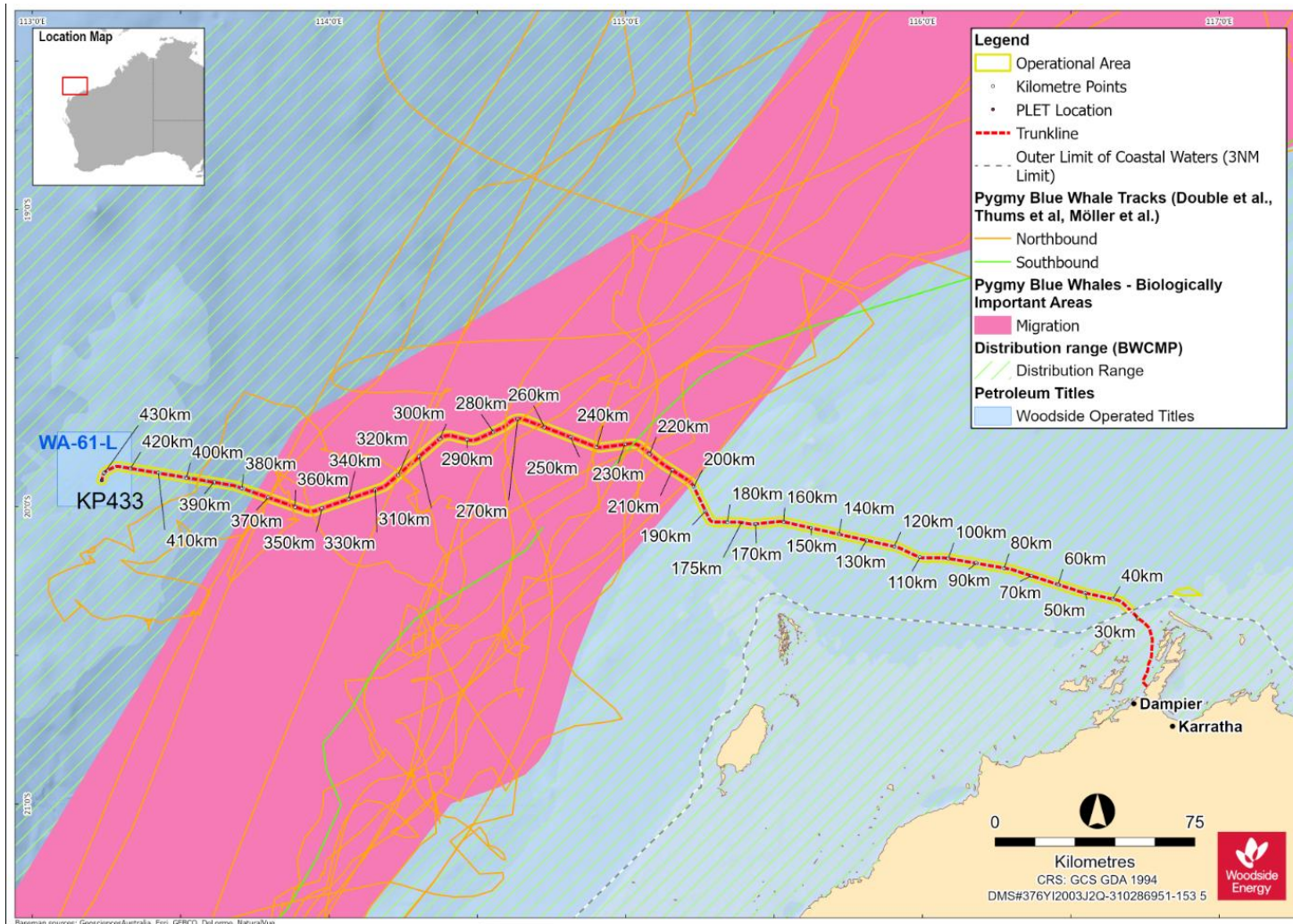


Figure 4-12: Pygmy blue whale BIA (migration) overlapping the Operational Area and satellite tracks of tagged pygmy blue whales

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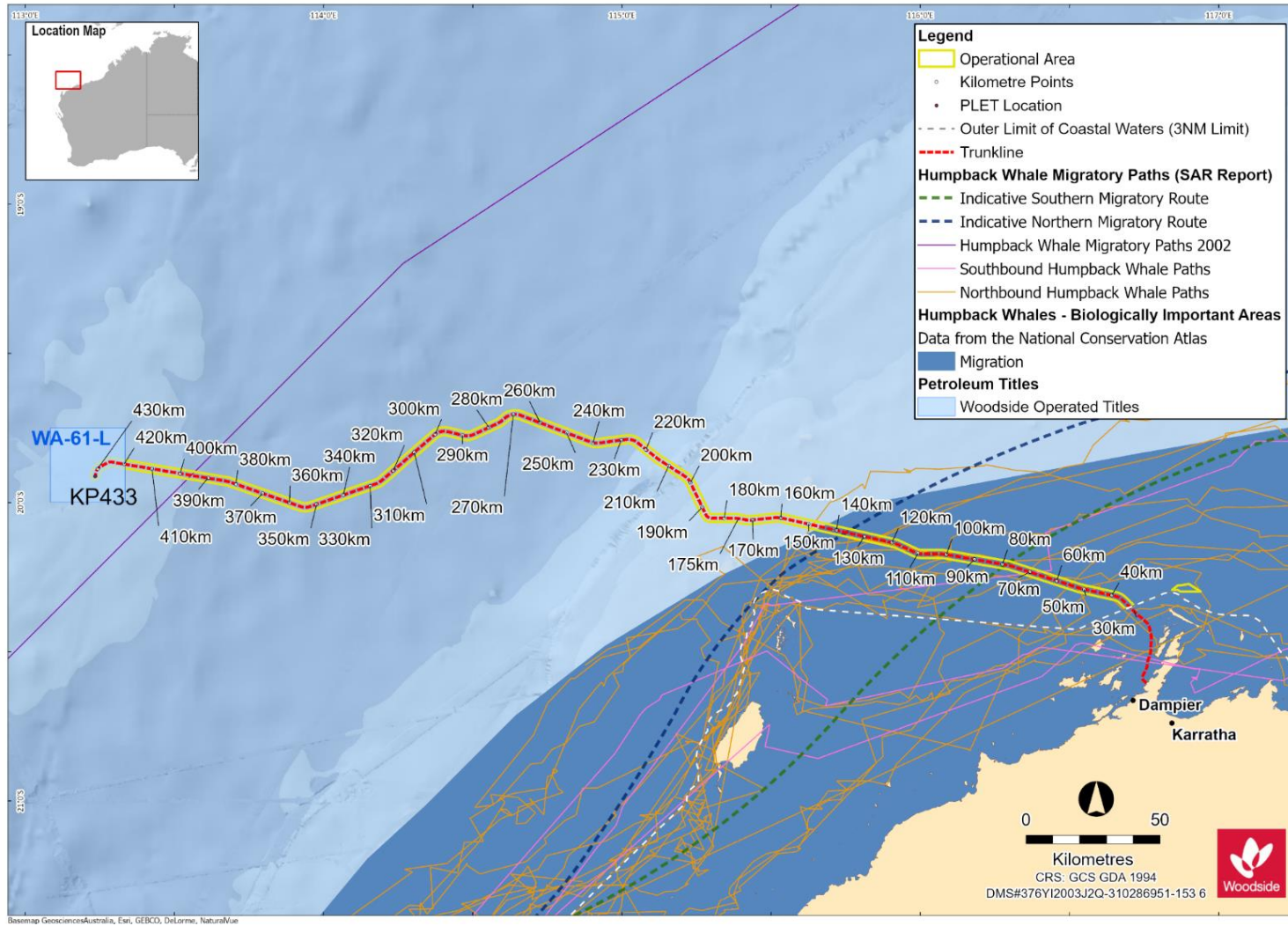


Figure 4-13: Humpback whale BIAs overlapping the Operational Area and satellite tracks of whales tagged between 2010 and 2012 (Double et al., 2012b, 2010)

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#### 4.6.4 Seabirds and Migratory Shorebirds

Table 4-15: Threatened and migratory seabird and migratory shorebird species predicted to occur within the Operational Area and EMBA<sup>2</sup>

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	EMBA
<i>Actitis hypoleucos</i>	Common sandpiper	N/A	Migratory	✓	✓
<i>Anous stolidus</i>	Common noddy	N/A	Migratory	✓	✓
<i>Anous tenuirostris melanops</i>	Australian lesser noddy	Vulnerable	N/A	✗	✓
<i>Apus pacificus</i>	Fork-tailed swift	N/A	Migratory	✓	✓
<i>Ardenna carneipes</i>	Flesh-footed shearwater	N/A	Migratory		✓
<i>Ardenna pacifica</i>	Wedge-tailed shearwater	N/A	Migratory	✓	✓
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	N/A	Migratory	✓	✓
<i>Calidris canutus</i>	Red knot	Endangered	Migratory	✓	✓
<i>Calidris ferruginea</i>	Curlew sandpiper	Critically Endangered	Migratory	✓	✓
<i>Calidris melanotos</i>	Pectoral sandpiper	N/A	Migratory	✓	✓
<i>Calonectris leucomelas</i>	Streaked shearwater	N/A	Migratory	✓	✓
<i>Charadrius leschenaultia</i>	Greater sand plover	Vulnerable	N/A	✗	✓
<i>Charadrius veredus</i>	Oriental plover	N/A	Migratory	✗	✓
<i>Diomedea amsterdamensis</i>	Amsterdam albatross	Endangered	Migratory	✗	✓
<i>Diomedea exulans</i>	Wandering albatross	Vulnerable	Migratory	✗	✓
<i>Falco hypoleucos</i>	Grey falcon	Vulnerable	N/A	✗	✓
<i>Fregata ariel</i>	Lesser frigatebird	N/A	Migratory	✓	✓
<i>Fregata minor</i>	Great frigatebird	N/A	Migratory	✓	✓
<i>Glareola maldivarum</i>	Oriental pratincole	N/A	Migratory		✓

<sup>2</sup> N.B. The wedge-tailed shearwater was not identified in the PMST as potentially occurring within the OA; however, given a BIA for wedge-tailed shearwater breeding partially overlaps the OA, it is considered possible that the species may be encountered within the EMBA.

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Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	EMBA
<i>Hydroprogne caspia</i>	Caspian tern	N/A	Migratory	x	✓
<i>Limnodromus semipalmatus</i>	Asian dowitcher	N/A	Migratory	x	✓
<i>Limosa lapponica</i>	Bar-tailed godwit	N/A	Migratory	x	✓
<i>Limosa lapponica menzbieri</i>	Northern Siberian bar-tailed godwit	Critically endangered	N/A	x	✓
<i>Macronectes giganteus</i>	Southern giant petrel	Endangered	Migratory	✓	✓
<i>Macronectes halli</i>	Northern giant petrel	Vulnerable	Migratory	x	✓
<i>Numenius madagascariensis</i>	Eastern curlew	Critically Endangered	Migratory	✓	✓
<i>Onychoprion anaethetus</i>	Brindled tern	N/A	Migratory	x	✓
<i>Pandion haliaetus</i>	Osprey	Critically Endangered	Migratory	✓	✓
<i>Phaethon lepturus</i>	White-tailed Tropicbird	N/A	Endangered	✓	✓
<i>Phaethon lepturus fulvus</i>	Christmas Island White-tailed Tropicbird, Golden Bosunbird	Endangered	N/A	✓	✓
<i>Papasula abbotti</i>	Abbott's booby	Endangered	N/A	x	✓
<i>Pterodroma mollis</i>	Soft-plumaged petrel	Vulnerable	N/A	x	✓
<i>Rostratula australis</i>	Australian painted snipe	Endangered	N/A	x	✓
<i>Sterna dougallii</i>	Roseate tern	N/A	Migratory	✓	✓
<i>Sternula albifrons</i>	Little Tern	N/A	Migratory	x	✓
<i>Sternula nereis</i>	Australian fairy tern	Vulnerable	N/A	✓	✓
<i>Sula dactylatra</i>	Masked booby	N/A	Migratory	x	✓
<i>Sula leucogaster</i>	Brown booby	N/A	Migratory	x	✓
<i>Thalassarche carteri</i>	Indian yellow-nosed albatross	Vulnerable	Migratory	x	✓
<i>Thalassarche cauta</i>	Shy albatross	Endangered	Migratory	x	✓
<i>Thalassarche impavida</i>	Campbell albatross	Vulnerable	Migratory	x	✓
<i>Thalassarche melanophris</i>	Black-browed albatross	Vulnerable	Migratory	x	✓

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Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				Operational Area	EMBA
<i>Thalassarche steadi</i>	White-capped albatross	Vulnerable	Migratory	x	✓
<i>Thalasseus bergii</i>	Greater crested tern	N/A	Migratory	x	✓
<i>Tringa nebularia</i>	Common greenshank	N/A	Migratory	x	✓

**Table 4-16: Seabird and shorebird BIAs within the Operational Area and EMBA**

Species	BIA type	Approximate distance and direction from Operational Area (km)
Roseate tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Overlaps Operational Area from KP 32 to ~KP 58. Breeding populations occur throughout the EMBA on fringing islands of the Burrup Peninsula, Montebello Islands, North Turtle Island, Airlie Island, the Ningaloo coast and Bernier Island.
Wedge-tailed shearwater	Breeding (offshore islands of the Pilbara, Gascoyne (Muiron Islands) Breeding, foraging (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Overlaps Trunkline Project Area from KP 32 to ~KP 220, and Offshore Borrow Ground Project Area. Occurs throughout EMBA across fringing islands of Dampier Archipelago to Cape Range and to Barrow Island.
Lesser crested tern	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Breeding populations occur in the EMBA around North Turtle Island, Lowendal Islands, and Thevenard Island.
Lesser frigatebird	Breeding (Kimberley, Pilbara and Gascoyne coasts and islands including Ashmore Reef)	Breeding population occurs in the EMBA in up to a 30 km radius from North Turtle Island
Australian fairy tern	Breeding (Pilbara and Gascoyne coasts and islands) with 5 km foraging buffer	Overlaps the Trunkline Project Area from KP 32 to ~KP 34 and directly adjacent to Offshore Borrow Ground Project Area to the south. Breeding populations occur within the EMBA around fringing islands of Burrup Peninsula, Cape Preston, Thevenard Island, Montebello Islands, Lowendal Islands and Barrow Island and Bernier and Dorre islands.
Brown booby	Breeding (Kimberley and northern Pilbara coasts and islands also Ashmore Reef) with 40 km foraging buffer	Occurs in the EMBA at North Turtle Island, 190 km north-east of Operational Area.

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**Table 4-17: Seasonal sensitivities for key seabirds and shorebirds with known breeding in the Dampier Archipelago**

Species	January	February	March	April	May	June	July	August	September	October	November	December
Wedge-tailed shearwater – breeding *fledging exodus	Critical life stage - breeding							Critical life stage - breeding				
Roseate tern – breeding				Critical life stage - breeding								
Australian fairy tern – breeding						Critical life stage - breeding						
Caspian Tern – breeding				Critical life stage - breeding								
Migratory shorebirds (general) – present (non-breeding)	Critical life stage - breeding											Critical life stage - breeding
Critical life stage - breeding												

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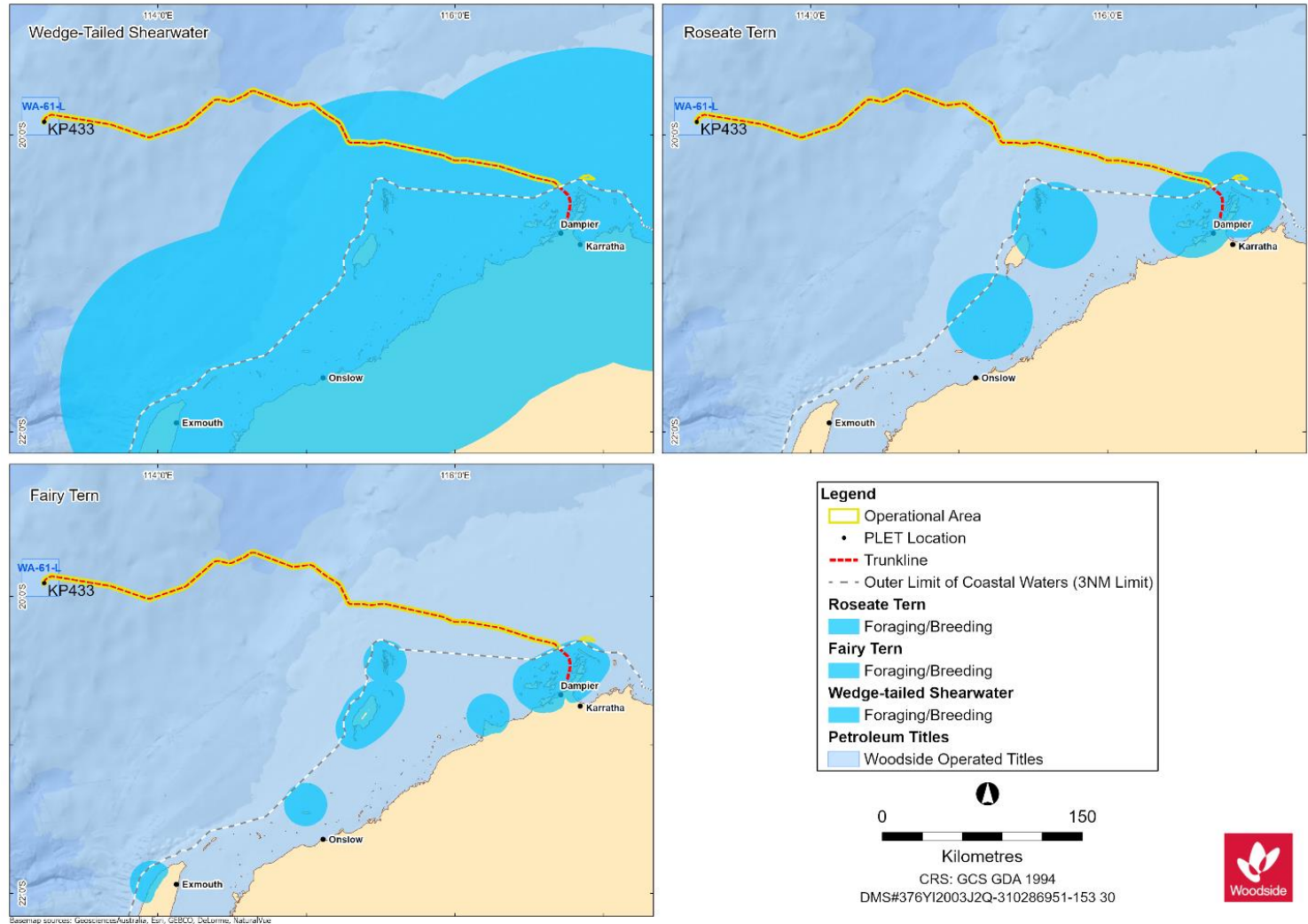


Figure 4-14 Seabird BIA

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Table 4-17 above highlights the timing of critical life stages for key seabird and shorebird species that utilise island and mainland coastal habitats in the Dampier Archipelago. There are 42 islands, islets and rocks off the coast of Dampier and the area includes significant breeding grounds and refuge sites for a variety of bird species.

### **Wedge-tailed shearwater**

The Wedge-tailed shearwater is listed as migratory under the EPBC Act. Section 8.2 of the Master Existing Environment (Appendix H) provides a description of Wedge-tailed shearwaters. Approximately 1 million pairs breed in Australia, most of which do so on islands in Western Australia between Rottnest Island in the south to Ashmore Reef in the north. The largest breeding populations are at the Houtman Abrolhos (600,000 pairs - Surman and Nicholson 2009), and throughout the NWS region of the NWMR, where large populations on Muiron Islands (300,000 pairs) and Serrurier Island (60,000 pairs) exist (Surman and Nicholson 2009, 2015).

Nesting occurs around the islands of the Dampier Archipelago and has been reported for Rosemary Island (Inland between Beach 7 and Hungerford Bay) (Parks and Wildlife & AMOSC 2014).

Adults are absent from their breeding colonies during the interbreeding period and return from their tropical Indian Ocean over-wintering grounds from late June onwards to re-excavate their burrows. This species is highly synchronous in timing of breeding; all eggs within a colony are laid within a ten-day period. They lay their single egg during early November, which is then incubated until the chick hatches (after 53 days) in early January. Once hatched, adults leave the burrows to forage locally during the day returning at night to feed chicks until they are ready to fledge (Nicholson 2002). Due to the high synchronicity in egg laying, fledging period is generally restricted to the first two weeks of April (Nicholson 2002).

Breeding behaviours are nocturnal in wedge-tailed shearwaters. Adults return to and depart the colony at night and fledglings depart the colony at night. In the lead up to fledging, chicks also leave their burrows to exercise their wings outside burrows.

Adults may not return to feed chicks each night; wedge-tailed shearwaters breeding on the Muiron Islands (north) undertook bimodal foraging behaviour: extensive foraging trips during the incubation period (1,200 – 1400 km) and shorter trips during chick rearing (<300 km, Cannell et al. 2019). Longer foraging trips took individuals in a NW direction offshore towards oceanic seamounts. Conversely, the shorter tended to include waters to the west and NW of the Muiron Islands (Cannell et al. 2019).

The key BIAs for NWMR are: (i) breeding (encompassing offshore and coastal islands and mainland sites) and (ii) breeding and foraging with this BIA extending west over the offshore waters of the NWS (Figure 4-14). A foraging (in high numbers BIA) is located south of Shark Bay to Geographe Bay and includes offshore waters and the Abrolhos Houtman islands.

### **Australian Fairy Tern**

The Australian fairy tern (*Sternula nereis nereis*) is listed as vulnerable under the EPBC Act. Within Western Australia the sub species includes a migratory population with individuals occasionally migrating into the southern region of the NWMR during the winter months.

Within the NWMR, breeding occurs in small colonies between June-September on offshore islands, including Simpson Island, Barrow Island, the Montebello Islands, the Lowendal Islands, Thevenard Island, Serrurier Island, the islands in the Dampier Archipelago, Maryanne Shoals and Egret Island (Dunlop 2018; Johnstone et al 2013; Surman pers. comm.). The Australian Fairy Tern BIAs in proximity to the Operational Area are shown in Figure 4-14.

While information regarding foraging ecology of this species within the NWMR is lacking, the Australian fairy tern has been studied in South Australia. Here, the species typically forages in inshore waters and has been reported to rarely travel beyond 2 km during the breeding season (Paton and Rogers 2009). Australian fairy terns are diurnal foragers.

## Roseate tern

The roseate tern (*Sterna dougalli*) is listed as migratory under the EPBC Act. There are many breeding populations for this species in the NWMR including Ashmore Reef, Bonaparte Archipelago, Lacepede Islands, Dampier Archipelago and the Lowendal Islands.

The largest roseate tern breeding colony in Western Australia is in the Houtman Abrolhos Islands (Surman and Nicholson, 2009). Large colonies breed within the Lowendal Island and Montebello Island region where there is a stronghold for this species (Higgins and Davies 1996). A large breeding colony has also been recorded on Goodwyn Island on the Dampier Archipelago (Higgins and Davies 1996). Peak breeding times across the NWMR is between May to August.

Birds are known to usually move away from breeding colonies following breeding, but their non-breeding range is not well defined (Higgins and Davies 1996). Many non-breeding roseate terns have been observed at several remote locations in the Kimberley and there are high numbers also recorded at the Eighty Mile Beach Ramsar site (Surman pers obs).

Roseate terns will forage diurnally, up to 60 km from their colonies and always over deeper shelf waters, rather than shallow coastal areas (Surman and Wooller, 2003).

Breeding BIAs across the NWMR are associated with known breeding colonies on islands, while a resting BIA has been identified at Eighty Mile Beach (Figure 4-14).

Section 8.2 of the Master Existing Environment further describes the ecology and biology of Roseate terns.

## Caspian tern

The Caspian tern is listed as migratory under the EPBC Act. It is moderately common across coastlines of the NWMR and offshore islands (Johnstone et al. 2013).

Breeding occurs as solitary nests or in colonies (up to 52 breeding pairs observed) mainly on islands, including North Turtle Island, Dampier Archipelago including Enderby island, and Frazer Island, and occasionally on mainland coasts, such as Cape Preston and the Northwest Cape, from late March to early November (Johnstone et al 2013).

During breeding, adults can forage up to 60 km from the colony during this period to catch fish and meet their elevated energetic requirements at this time (Burger et al. 1996; Balance et al. 2008). The Caspian tern is a diurnal forager, with the length and frequency of foraging trips, as well as relative time spent foraging or attending chicks, changes with food resource availability (Dunlop & McNeill 2017). Caspian tern usually forage in shallow, sheltered waters, by plunge-diving for various prey species (Serventy et al. 1971).

Although foraging BIAs occur in the SWMR, no BIAs for this species have been identified in the NWMR.

Section 8.2 of the Master Existing Environment further describes the ecology and biology of Caspian terns.

### 4.6.5 Seasonal Sensitivities for Protected Species

Seasonal sensitivities for protected migratory species identified as potentially occurring within the Operational Area are identified in Table 4-18. Movement patterns of all protected species identified in Section 4.5.1 are described in Appendix H and the Scarborough OPP.

**Table 4-18: Key seasonal sensitivities for protected migratory species identified as occurring within the Operational Area**

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

\*refers to peak period

### 4.7 Key Ecological Features (KEFs)

Key Ecological Features (KEFs) are not MNES, however are considered components of a Commonwealth marine area. They are considered important for a marine regions biodiversity or ecosystem-based functioning. Eight KEFs overlap the EMBA, of which three overlap the Operational Area (Figure 4-15), identified in Table 4-19, and described in detail in Section 5.5, Appendix H and the Scarborough OPP.

**Table 4-19: KEFs within the Operational Area and EMBA**

Key Ecological Feature	Operational Area	EMBA	Description
Exmouth Plateau	Overlaps Operational Area from KP 380 to Offshore Project Area	100% overlap with the EMBA	Water depth: 500 m – 5000 m. Unique seafloor features with regional ecological significance. Believed to affect deep water flow and associated with internal tides, contributing to localised upwelling.
Continental Slope Demersal Fish Communities	Small extent (<0.05%) transects the Trunkline Project Area at ~KP 200	21% overlap with the EMBA	High biodiversity values, hosting more than 500 fish species, 76 of which are endemic.
Ancient Coastline at 125 m depth contour	Overlaps Operational Area around KP 190. Approximately 0.03% of the KEF transects the Trunkline Project Area	30% overlap with the EMBA.	Water depths 115 m – 135 m. Provides hard benthic substrate for regionally significant biodiversity hotspots and localised upwelling. The area where the KEF transects the Trunkline Project Area is predominantly bare sand habitat supporting sparse coverage of benthic organisms.
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	~166 km south-west of KP 180	100% overlap with the EMBA	Interacts with Leeuwin Current to create localised upwellings and support aggregations of marine megafauna, migratory fish and seabirds.
Commonwealth waters adjacent to Ningaloo Reef	~210 km south-west of KP 180	70% overlap with the EMBA.	Defined as the waters contained within the Ningaloo AMP and thus shares the same ecological values and integrity.
Glomar Shoal	~62 km north of KP 32	100% overlap with the EMBA	Water depths 33 m – 77 m. Defined as a KEF due to high productivity and marine life aggregations.
Western demersal slope and associated fish communities	~875 km south-west of KP 160	1% overlap with the EMBA	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.
Wallaby Saddle	~723 km south-west of KP 160	22% overlap with the EMBA	Water depths 4000 m – 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.

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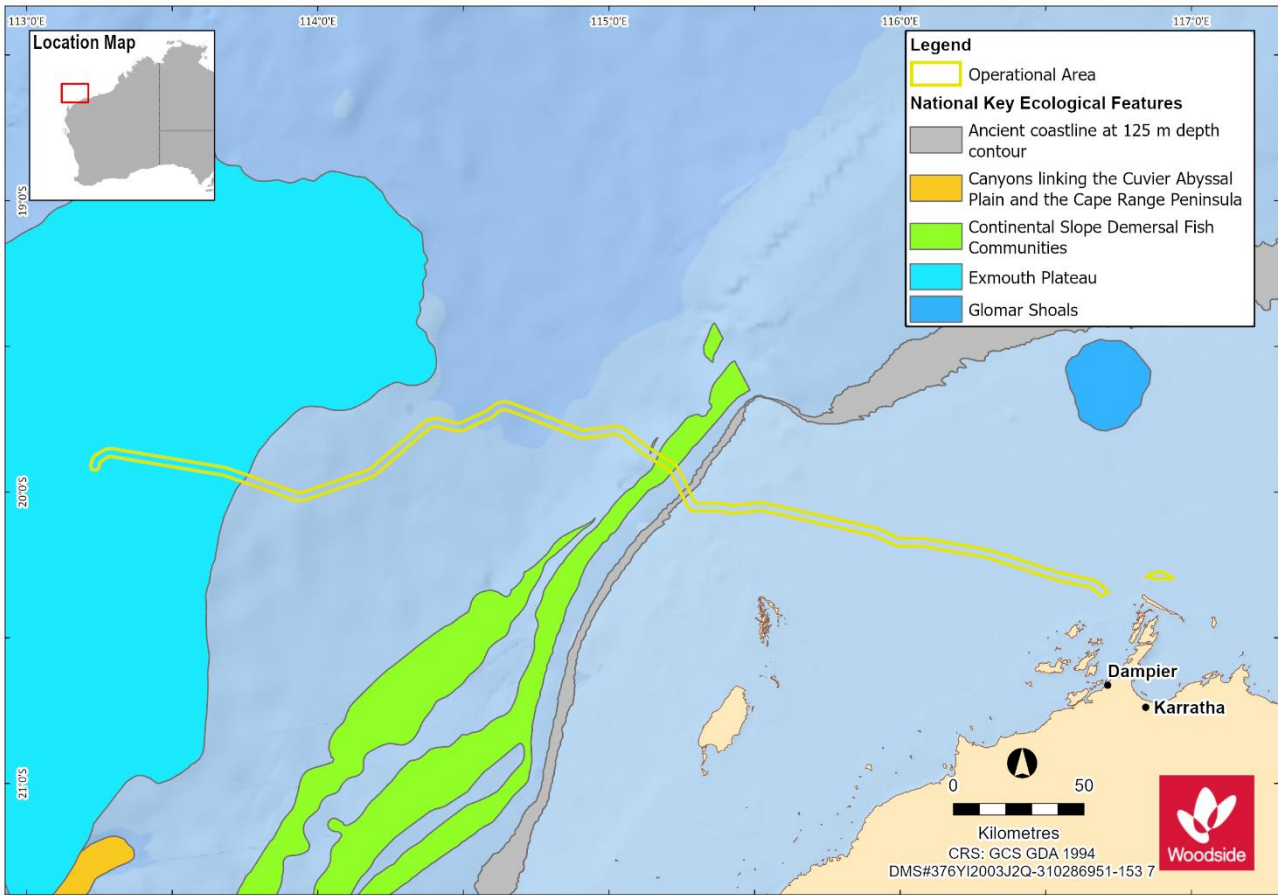


Figure 4-15: KEFs overlapping the Operational Area

#### 4.8 Protected Places

The NWMR offshore environments contains high value or sensitive environmental assets (such as habitat and species) including Commonwealth offshore waters, as well as the wider regional context including coastal waters and habitats.

Many sensitive receptor locations are protected as part of Commonwealth and State managed areas and have been allocated conservation objectives (International Union for Conservation of Nature (IUCN) Protected Area Category) based on the Australian IUCN reserve management principles in Schedule 8 of the EPBC Regulations 2000.

Protected places within the Operational Area and EMBA are identified in Table 4-20 and presented in Figure 4-15. Appendix H and the Scarborough OPP outline the natural values and sensitivities of protected places and other sensitive areas in the Operational Area and EMBA. In addition, Table 4-21 outlines the cultural, heritage and socio-economic values of the relevant AMPs.

**Table 4-20: Established protected places and other sensitive areas overlapping the Operational Area and EMBA**

	Distance (km) and direction from Operational Area to protected place or sensitive area	IUCN category* or relevant park zone overlapping the Operational Area and/or EMBA
<b>Australian Marine Parks (AMPs) overlapping EMBA</b>		
Montebello	Overlaps Operational Area between KP 108.4 – KP 191.6	Multiple Use Zone (IUCN VI)
Dampier	<1 km (Offshore Borrow Ground Project Area)	II, IV & VI
Gascoyne	~77 km south of KP 350	II, IV & VI
Ningaloo	~182 km south of KP 350	II & IV
Carnarvon Canyon	~450 km south of KP 350	IV
Abrolhos	~598 km south-west of KP 350	IV
Eighty Mile Beach	~218 km north-east of Offshore Borrow Ground Project Area	VI
Argo-Rowley Terrace	~268 km north-east of KP 200	VI
Shark Bay	~520 km south-west of KP 160	Multiple Use Zone (IUCN VI)
<b>State Marine Parks and Nature Reserves</b>		
<b>Marine Parks</b>		
Montebello	~25 south of KP 160	IA, II, IV & VI
Barrow Island	~45 km south-east of KP 180	IA, VI
Ningaloo	~287 km south-east of KP 350	IA, II & IV
Thevenard Island Nature Reserve	~162 km south-west of KP 160	IA
Great Sandy Island Nature Reserve	~61 km south-west of KP 32	IA
<b>Marine Management Areas</b>		
Barrow Island	~41 km south of KP 160	VI
Muiron Islands	~212 km south-west of KP 160	IA & VI
<b>World Heritage Areas (WHA)</b>		
Ningaloo Coast	~206 km south-west of KP 160	Unassigned
Shark Bay	~562 km south-west of KP 160	IA, II & IV
<b>National Heritage Places (NHP)</b>		
Ningaloo Coast (natural)	~206 km south-west of KP 160	-
Dampier Archipelago (indigenous)	~8 km east of KP 32	-
Shark Bay (natural)	~562 km south-west of KP 160	-
Dirk Hartog Landing – Cape Inscription (historic)	~654 km south-west of KP 160	-
<b>Commonwealth Heritage Properties (CHP)</b>		
Ningaloo Marine Area (natural)	~222 km south-west of KP 160	-
<b>Ramsar Wetlands of Importance</b>		
None		
<b>Nationally Important Wetlands</b>		

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	Distance (km) and direction from Operational Area to protected place or sensitive area	IUCN category* or relevant park zone overlapping the Operational Area and/or EMBA
Exmouth Gulf East	~209 km south of KP 160	
Hamelin Pool	~670 km south of KP 160	
Shark Bay East	~576 km south of KP 160	

\*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.

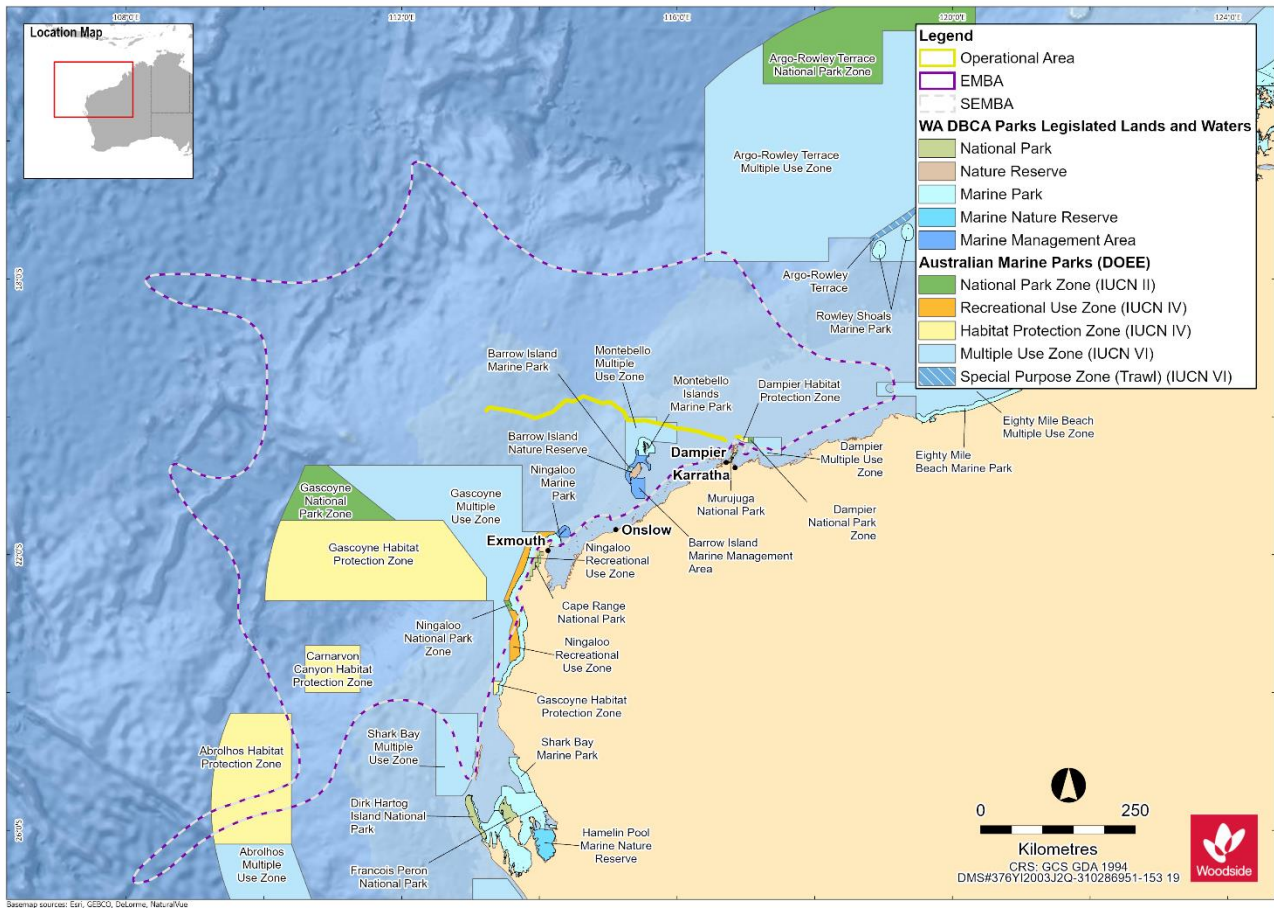


Figure 4-16: Protected areas overlapping the Operational Area and EMBA

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**Table 4-21: Cultural, heritage, socio and economic values of the Montebello and Dampier Marine Parks**

Value Type	Value Description
<b>Montebello Marine Park</b>	
Cultural Values <i>Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been using and managing sea country for tens of thousands of years</i>	At the commencement of the plan, 2018, there was limited information about the cultural significance of this Marine Park.  An ethnographic survey with Traditional Custodians Section 4.9.1) did not identify any cultural features or heritage values within the marine park. In addition, none were identified during consultation with Traditional Custodians (See Section 5)
Heritage values	Two known ship wrecks, Trial (wrecked 1622) and Tanami (unknown date)
Socio and economic value	Tourism, commercial fishing, mining and recreation are important activities in the Marine Park.  Contribute to the wellbeing of regional communities and the prosperity of the nation.
<b>Dampier Marine Park</b>	
Cultural Values <i>Sea country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been using and managing sea country for tens of thousands of years</i>	Specific cultural values have not been provided in the Management Plan.  An ethnographic survey with Traditional Custodians Section 4.9.1) did not identify any cultural features or heritage values within the marine park. In addition, none were identified during consultation with Traditional Custodians (See Section 5)
Heritage values	No known heritage values within the park
Socio and economic value	Port activities, commercial fishing and recreation, including fishing are important activities in the Marine Park.  Contribute to the wellbeing of regional communities and the prosperity of the nation.

## 4.9 Socio-economic Environment

### 4.9.1 Cultural Features and Heritage Values

#### 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 Operational Area and EMBA and the cultural features of the Operational Area and EMBA are described.

In line with The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013) (Burra Charter) and associated practice notes, Woodside understands heritage value to refer to the cultural significance of a place to an individual or group. A cultural feature, by contrast, is understood to be comparable to the Burra Charter term “fabric” and refer to a place’s elements, fixtures, contents and objects which have cultural values. Although these features are

necessarily physical, the place they inhabit or comprise may have tangible and intangible dimensions (ICOMOS 2013).

Woodside has undertaken archaeological assessments and ethnographic surveys to identify potential cultural values or features that may be impacted by Scarborough activities. These works have not identified heritage places, objects or values which will be impacted by the activities planned under this EP. However, through consultation with relevant persons, Woodside recognises the deep spiritual and cultural connection to the environment<sup>3</sup> that First Nations people hold.

#### 4.9.1.2 First Nations peoples

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

Native title claims are applications made to the Federal Court under the Native Title Act 1993 for a determination or decision about native title in a particular area. A claim is made by a native title claim group which asserts it holds native title rights and interests in an area of land and/or water, according to its traditional laws and customs. By making a claim, the native title claim group seeks a decision that native title exists so that its native title rights and interests are recognised by the common law of Australia. This is called a native title determination. A determination is a decision by a recognised body, such as the Federal Court or High Court of Australia, that native title either does or does not exist in relation to a particular area ([Native Title Tribunal](#)).

A requirement to establishing a positive determination of native title in court is proving that there is an organised society that occupied the land and/or waters at the time of British annexation. The requirement of an 'organised society' is set out by Justice Toohey in the historic judgment of *Mabo v Queensland (No 2)* [[1992\] HCA 23](#); [[1992\] 175 CLR 1](#) ('Mabo'). Justice Toohey had the following to say (at 187):

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

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

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

<sup>3</sup> Definition of 'Environment' in Regulation 4 of the OPPGS (Environment) Regulations are defined as:

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



- a native title claim has been made; or
- where no native title claim has been made.

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

The Native Title Act provides for a Representative Aboriginal/Torres Strait Islander Body (Native Title Representative Body) to be recognised by the Commonwealth Minister for an area. Native Title Representative Bodies have specialist functions set out in the Native Title Act within the area for which they are the Native Title Representative Body. However, the functions of a Native Title Representative Body are such that they do not hold details on the cultural features or heritage values of an area and therefore do not inform Woodside's understanding of heritage values or cultural features.

For the activity in this EP, there are seven coastal ILUAs and five native title claims or determinations overlapping the EMBA (see Figure 4-17).

#### 4.9.1.3 Coastally Adjacent First Nations Groups

Woodside understands that First Nations groups are keenly aware of the extent of their rights, interests and responsibilities for Country, and these are generally discrete, defined areas, including areas of sea (Smyth 2007). To identify cultural features and heritage values which may exist outside of native title claim, determination and ILUA areas, Woodside considers native title claims, determinations and ILUAs coastally adjacent to the EMBA to be an instructive means of identifying potentially relevant First Nations groups to be consulted (See Table 5-2).

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

There are two ILUAs which overlap the proposed Borrow Ground area. Robe River Kuruma Aboriginal Corporation is party to the KM & YM ILUA which overlaps the proposed Borrow Ground. Woodside understands that this ILUA relates to the definition of the boundary between WAC and Robe River Kuruma Aboriginal Corporation's respective native title areas and does not include any cultural values relevant for to the Borrow Ground area. Wirrawandi Aboriginal Corporation is also party to the KM & YM ILUA which overlaps the proposed Borrow Ground. Woodside understands that this ILUA relates to the definition of the boundary between Wirrawandi Aboriginal Corporation and Robe River Kuruma Aboriginal Corporation's respective native title areas and does not include any cultural values relevant to the Borrow Ground area. The Kuruma Marthudunera and Yaburara and Coastal Mardudhunera ILUA overlaps the proposed Borrow Ground area, however there are no Traditional Custodian Groups specified.

A summary of native title claims, determinations and ILUAs overlapping or coastally adjacent to the EMBA is set out in Table 4-22. Claims and determinations have not been differentiated in this table, as it is acknowledged that either of these may indicate the existence of rights and interests.

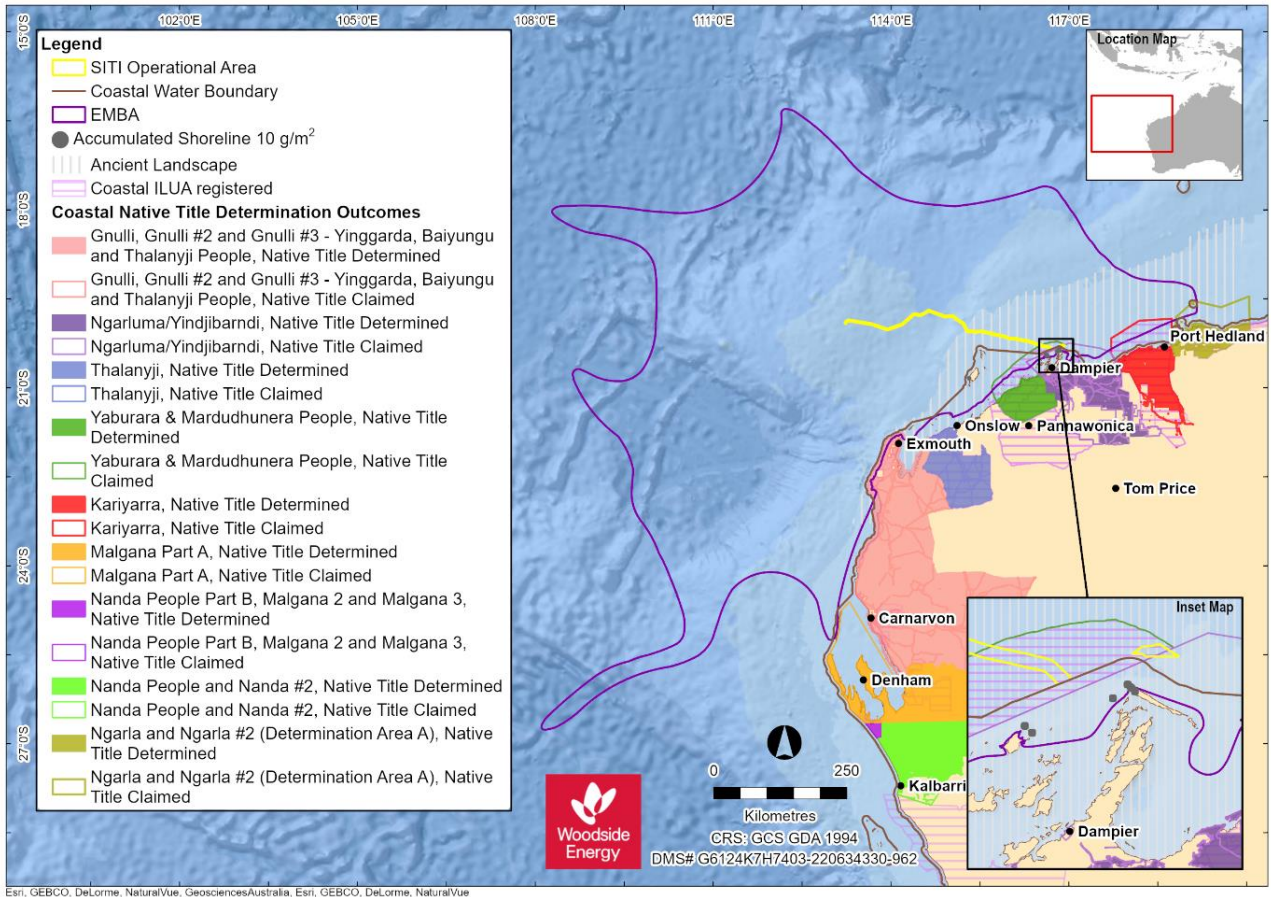


Figure 4-17: Operational Area and EMBA in relation to native title claims, determination and ILUAs

Table 4-22: 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
<b>Claim / Determination</b>			
Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation (YAC)	Yes	Yes
Kariyarra	Kariyarra Aboriginal Corporation	Yes	Yes
Malgana Part A	Malgana Aboriginal Corporation	No	Yes
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
Ngarla and Ngarla #2 (Determination Area A)	Wanparta Aboriginal Corporation	Yes	Yes
Ngarluma People	Ngarluma Aboriginal Corporation (NAC)	No	Yes

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Claim / Determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally Adjacent to the EMBA
Ngarluma/Yindjibarndi People	NAC, Yindjibarndi Aboriginal Corporation	Yes	Yes
Thalanyji	Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	No	Yes
Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation (WAC)	Yes	Yes
<b>ILUA</b>			
Alinta-Kariyarra Electricity Infrastructure ILUA	No representative body specified.	Yes	Yes
Anketell Port, Infrastructure Corridor and Industrial Estates Agreement	NAC	Yes	Yes
Brickhouse and Yinggarda Aboriginal Corporation ILUA	YAC	No	Yes
Cape Preston Project Deed (YM Mardie ILUA)	WAC	Yes	Yes
Cape Preston West Export Facility	WAC	No	Yes
FMG - Kariyarra Land Access ILUA	No representative body specified.	Yes	Yes
Gnarloo ILUA	NTGAC	No	Yes
Kariyarra and State ILUA	Kariyarra Aboriginal Corporation	No	Yes
KM & YM ILUA	WAC, Robe River Kuruma Aboriginal Corporation	Yes	Yes
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement	No representative body specified.	Yes	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
Ngarla Pastoral ILUA	Wanparta Aboriginal Corporation	No	Yes
Ningaloo Conservation Estate ILUA	NTGAC	Yes	Yes
Quobba – Yinggarda Pastoral ILUA	YAC	No	Yes
RTIO Kuruma Marthudunera People ILUA	Robe River Kuruma Aboriginal Corporation	No	Yes
RTIO Ngarluma ILUA (Body Corporate Agreement)	NAC	No	Yes

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#### 4.9.1.4 Marine Parks

Woodside acknowledges that Commonwealth and State Marine Park Management Plans have sought to recognise cultural values of First Nations groups. Australian Marine Parks (AMP) describe this framework in the following way: ‘when making decisions about what can occur in marine parks and what action we will take to protect marine parks, we take values into account’. AMP summarises these values as natural values, cultural values, heritage values and socio-economic values. Woodside is triggered to undertake an assessment of cultural values within Marine Park Management Plans where the operational area or EMBA overlaps an AMP. Woodside considers the management plans of marine parks that overlap the Operational Area and the EMBA to determine whether cultural features and heritage values have been identified and whether there are specified representative bodies referenced to contact regarding potential cultural features and heritage places.

The Operational Area overlaps features of the Montebello AMP. The EMBA overlaps features of a further eight AMPs under the South-West Marine Parks Network Management Plan 2018 and North-West Marine Parks Network Management Plan 2018. The Operational Area does not overlap any State Marine Parks, however the EMBA overlaps six 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 Appendix F, Table 1). Consultation with these groups may identify heritage values and cultural features beyond those addressed in the marine park management plans. Seven identifiable representative bodies were specified for the AMPs overlapped by the EMBA (see Table 4-23).

The marine park management plans did note for the Abrolhos, Dampier, Gascoyne, Montebello, Ningaloo and Shark Bay AMPs that the Yamatji Marlpa Aboriginal Corporation (YMAC) is the relevant Native Title Representative Body, and that for Eighty Mile Beach AMP both YMAC and Kimberley Land Council (KLC) are native Title Representative bodies. Consultation with YMAC and KLC included discussion of the Traditional Custodians who may hold knowledge of heritage values or cultural features (See Appendix F, Table 1).

**Table 4-23: Summary of Commonwealth and State Marine Park Management Plan EMBA overlap**

Marine Park Management Plan	Operational Area Overlap	EMBA Overlap	Specified Bodies
<b>Commonwealth Marine Park Management Plan</b>			
Abrolhos AMP	No	Yes	No identifiable body specified.
Argo-Rowley Terrace AMP	No	Yes	No identifiable body specified.
Carnarvon Canyon AMP	No	Yes	No identifiable body specified.
Dampier AMP	No	Yes	NAC, Yindjibarndi Aboriginal Corporation.
Eighty Mile Beach AMP	No	Yes	Karajarri Traditional Lands Association, Nyangumarta Karajarri Aboriginal Corporation, Nyangumarta Warrarn Aboriginal Corporation, Wanparta Aboriginal Corporation.
Gascoyne AMP	No	Yes	No identifiable body specified.
Montebello AMP	Yes	Yes	No identifiable body specified.
Ningaloo AMP	No	Yes	No identifiable body specified.
Shark Bay AMP	No	Yes	No identifiable body specified.
<b>State Marine Park Management Plan</b>			
Barrow Island Marine Management Area	No	Yes	No identifiable body specified.
Barrow Island MP	No	Yes	No identifiable body specified.
Cape Range National Park	No	Yes	No identifiable body specified.

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Marine Park Management Plan	Operational Area Overlap	EMBA Overlap	Specified Bodies
Montebello Islands MP	No	Yes	No identifiable body specified.
Muiron Islands Marine Management Area	No	Yes	No identifiable body specified.
Ningaloo MP	No	Yes	NTGAC.

In the management plans for all nine 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)

The South-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 Petroleum Activities Program has been identified. The plan also references artefacts located outside of the AMP and the EMBA on islands in State waters.

The North-West Marine Parks Network Management Plan 2018 also notes that cultural features of the Eighty Mile Beach AMP include traditional practices continuing today, staple foods of living cultural value and that access to sea country by families is important for cultural traditions, livelihoods and future socio-economic development opportunities. No impact pathway that may disrupt traditional practices or access to sea country from this Petroleum Activities Program has been identified. Management of cultural features within marine ecosystems, including food sources, is discussed in Section 4.9.1.4.

Both management plans for the AMPs note shipwrecks within the AMPs and overlap with World, National and Commonwealth heritage lists. These are addressed in Sections 4.9.1.4 and 4.9.1.9 below.

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

A number of management plans for the state marine parks also note Indigenous and maritime heritage within the marine parks. These are addressed in Sections 4.9.1.4 below.

#### 4.9.1.5 Sea Country Values

‘Sea Country’ can be defined as the area of sea over which a First Nations group has interests, cultural value, connection and use. It has been noted that “the saltwater peoples of the north-west are associated with discrete clan estates or tribal areas, often referred to in contemporary Aboriginal English as ‘saltwater country’ or ‘sea country’. Country’ refers to more than just a geographical area: it is shorthand for all the values, places, resources, stories and cultural obligations associated with that geographical area.” (Smyth 2007). “Sea country is valued for Indigenous cultural identity, health and wellbeing” (DNP 2018a, 2018b). 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).

In terms of seascape extent, 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. 20–30 km 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 100 km 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).

Woodside recognises the potential for marine ecosystems to include cultural features as well as environmental values. The link between environmental protection and cultural heritage protection is illustrated in the Australian Government’s Indigenous Protected Areas Program. The Indigenous Protected Areas program provides for “areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation...IPAs deliver environmental benefits...Managing IPAs also helps Indigenous communities protect the cultural values of their country for future generations...” (DCCEEW, 2023). This intrinsic link concept is also described by MAC (2021) as it relates to the values of the marine environment that are of cultural importance to MAC based on engagement with their Elders and Murujuga Land and Sea Unit Rangers. Elders were clear that all living things in Mermaid Sound are connected and that Mermaid Sound and Dampier Archipelago (Murujuga) are considered one place where the entire environment and all ecosystems hold both cultural and environmental value, with these types of values (cultural and environmental) intrinsically linked (MAC, 2021 as cited in Woodside 2023a).

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

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

- Desktop assessment of sea country values from publicly available sources
- Specific studies including ethnographic surveys and archaeological heritage assessments
- Consultation with First Nations groups and individuals

The process for identifying First Nations groups who may have interests and connection in Sea Country are set out in Section 4.9.1.3 and Section 5.8. The scope of advice Traditional Custodians were encouraged to provide through ethnographic surveys (see Section 4.9.1.5.2) or through project consultation was not limited by reference to any particular boundaries or limits of Sea Country.

#### **4.9.1.5.1 Desktop Assessment of Sea Country Values**

##### ***Cultural features and heritage values identified in publicly available literature***

Publicly available sources were assessed for any records of previously identified Sea Country values or cultural features that may overlap with the Operational Area or EMBA. Where cultural features or Sea Country values were identified these are summarised in Table 4-24 according to the First Nations groups (where identified or inferable) who hold these values.

All cultural features and heritage values restricted to onshore locations above the highest astronomical tide (HAT) or inland waters have been excluded in Table 4-24. This is on the basis that the Operational Area does not intersect onshore sites (~30 km from Dampier), while the EMBA is predicted to extend up to HAT where there is shoreline contact (above thresholds at outer islands of the Dampier Archipelago (Lady Nora Island, Brigadier Island, Legendre Island and Cohen Island) and at Barrow Island). Where the geographical extent is not specified or unclear it has been included for completeness.

**Table 4-24: Cultural features and heritage values identified in publicly available literature**

First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Area	EMBA
Gnulli (Baiyungu, Thalanyji, Yinggarda)	Feature: resources including marine animals. Value: traditional knowledge holds that ancestors live on the land and in the water. Therefore, people have obligations to access and care for these places (e.g., keeping them clean).	Peck on behalf of the Gnulli Native Title Claim Group v State of Western Australia [2019] FCA 2090	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Feature: heritage sites in the Ningaloo region include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources. Feature: resources including gajalbu (emu), bundgurdi (kangaroo), bardurra (bush turkey), majun (marine turtles), turtle eggs, bilygurumarda (osprey), fish, shellfish and plants. Feature: mudflats, mangroves and sand dunes provide a critical breeding ground for marine and terrestrial wildlife. Value: the Ningaloo region contains cultural heritage dating back at least 32,000 years, including ceremonial Thalu sites.  Value: connection to Country is important to the Traditional owners' spirituality and religion. Value: caring for Country - "The southern coastal reserves along the Ningaloo Coast are jointly managed by Traditional Owners and the DBCA. The Joint Management Body ensures that the Traditional Owners have an opportunity to make decisions about environmental management and land use". This document also includes information that is marked that cannot be copied, reproduced or used without consent.	DBCA 2020	No  Possible (turtles, fish) No (other resources)  No  No  Possible (unspecified)  No	Possible (Shoreline accumulation areas)  Possible (turtles, turtle eggs, fish, shellfish) No (other resources) Possible (mangroves)  Possible (unspecified, but likely refers to onshore areas outside the EMBA)  Possible (unspecified, but likely due to location of EMBA)  Yes
	Feature: resources including mangrove crabs, gastropods, shellfish, dugong, turtle.	Morse 1993.	Possible (turtles, dugong) No (other resources from a cultural context)	Possible (all)
	Value: traditional knowledge recalls that a salt water serpent lives in the sea and brings fish to shore	Zaunmayr 2016	Possible (unspecified)	Possible (unspecified)

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First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Area	EMBA
Malgana	<p>Feature: resources including bobtail, long-tail, kangaroo, emu, pink-grey galah, mull-hawk, bird eggs (shags [cormorants], seagull, divers), turtle eggs, dugongs, turtle, mullet, bluebone, whiting, snapper, oysters, mussels, crabs, prawns, scallops, cockles, little 'redies', black snapper and mallee fowl.</p> <p>Value: access to Country</p>	Oxenham on behalf of the Malgana People v State of Western Australia [2018] FCA 1929	<p>Possible (turtles, dugong, fish)</p> <p>No (other resources from a cultural context)</p> <p>No</p>	<p>Possible (turtles, turtle eggs, dugong, fish, invertebrates)</p> <p>No (onshore resources)</p> <p>Possible (unspecified)</p>
	<p>Feature: resources including dugong, green and loggerhead turtles and sharks.</p> <p>Value: traditional knowledge maintains records of freshwater seeps in the submerged landscape.</p>	Statton et al. 2021.	<p>Possible (turtles, dugong, sharks)</p> <p>Possible (unspecified, but unlikely due to location of Operational Area)</p>	<p>Possible (turtles, dugong, sharks)</p> <p>Possible</p>
	<p>Feature: resources including fish, shellfish, turtles and dugong.</p> <p>Feature: archaeological sites.</p>	Briggs and Green, 2008.	<p>Possible (turtles, dugong, fish)</p> <p>No (broader operational Area); Possible albeit unlikely (borrow ground only)</p>	<p>Possible (turtles, dugong, fish, shellfish)</p> <p>Possible</p>
	<p>Feature: green sea turtles, dugongs, shags and bottlenose dolphins are species of cultural significance.</p>	Malgana Land and Sea Management et al. 2021.	Possible (turtles, dugong, dolphins, seabird)	Possible (turtles, dugong, dolphins, seabird)
	<p>Value: sharing and controlling the sharing of knowledge.</p>	Lyons et al. 2021.	Possible (unspecified, but unlikely due to location of Operational Area)	Possible
Nanda	<p>Value: access to Country resulting in physical and mental health.</p> <p>Value: Water serpents must not be disturbed in pools.</p>	Drury on behalf of the Nanda People v State of Western Australia [2018] FCA 1849	<p>Possible (unspecified, but unlikely due to location of Operational Area)</p> <p>No</p>	<p>Possible</p> <p>No</p>
	<p>Value: traditional knowledge recalls that a water serpent swam down the Murchison River towards the sound of the ocean's waves and created a tunnel to the sea. Scared by the waves, the serpent swam back up the Murchison.</p>	Kabarri Visitor Centre 2023	No	No

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First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: traditional knowledge recalls that the turtle used to live on the land, but became trapped in the sea due to its greed for berries in the water.	Capewell 2020	Possible (turtles)	Possible (turtles)
	Value: traditional knowledge recalls that creation ancestors danced at the mouth of the river at Kalbarri and established the Law.	Murdock 2010	No	No
Ngarda-Ngarli (Mardudhunera, Ngarluma, Wong-Goo-Tt-Oo, Yaburara and/or Yindjibarndi)	Feature: archaeological sites on Murujuga. Feature: ceremonial sites. Feature: dreaming sites.	Department of the Environment and Heritage 2006	No No Possible (unspecified)	Possible Possible (unspecified) Possible (unspecified)
	Value: traditional knowledge recalls that the sea is a source of creation for flying foxes. Value: petroglyphs are understood as permanent signs left by ancestral beings. Value: petroglyphs depict the law. Value: cultural obligations to look after places of special potency. Value: petroglyphs are important in initiation and education.	DEC 2013.	Possible (unspecified) No No Possible No	Possible (unspecified) Possible (submerged) Possible (submerged) Possible Possible (submerged)
	Value: the sea is acknowledged a starting point for songlines, including the flying fox songline.	MAC 2023a	Possible (unspecified)	Possible (unspecified)
	Feature: resources including fishes, turtles and dugong. Value: traditional knowledge recalls a sea serpent which travelled from the coast to inland pools.	Water Corporation 2019	Possible (turtles, dugong, fish) Possible (unspecified)	Possible (turtles, dugong, fish) Possible (unspecified)
	Value: traditional knowledge recalls a water serpent from the ocean now lives in an inland pool. He created many sites and punishes law breakers. Value: In a separate account a sea serpent punishing people was driven back to the sea by a freshwater serpent.	Barber and Jackson 2011	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Value: traditional knowledge recalls Manggan created the seas.	NAC n.d.	Yes	Yes
	Value: traditional knowledge recalls Pannawonica Hill being carried from the sea near Barrow Island or Murujuga by a spirit bird.	Hook et al 2004.	Possible (unspecified)	Possible

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First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Area	EMBA
	Value: traditional knowledge recalls Murujuga is where ancestral beings emerged from the sea and brought the Law.	Australian Heritage Council 2012	Possible (unspecified)	Possible (unspecified)
	Feature: Submerged First Nations archaeological sites in Cape Bruguieres channel.	Benjamin et al 2020	No	No
	Feature: Submerged First Nations archaeological sites in Cape Flying Foam Passage.	Benjamin et al 2023	No	No
	Value: traditional knowledge recalls Maarga (creation ancestors) lifted the land and sky out of the ocean.	Milroy and Revell 2013 Japingka Aboriginal Art Gallery 2023.	Possible (unspecified)	Possible (unspecified)
	Feature: submerged waterholes related to the Kangaroo songline. Value; traditional knowledge holds that Songlines continue beyond the current coast and across the submerged landscape.	Kearney et al 2023.	No Possible (unspecified)	Possible Possible (unspecified)
	Value: songlines are captured through storytelling, rock art, songs and dance, and in the landmarks themselves. Value: Murujuga is the start of many songlines, including the Seven Sisters.	Bainger 2021	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Value: songlines at Murujuga date back to times when the sea-level was lower.	MAC 2023b.	Possible (unspecified)	Possible (unspecified)
	Feature: rock art Feature: sacred sites	Weerianna Street Media Production 2017.	No Possible (unspecified)	Possible (submerged) Possible (unspecified)
	Feature: resources including fish, turtles. Feature: fish traps exist throughout the archipelago. Feature: shell middens exist on coastal margins. Feature: submerged archaeological sites.  Value: Law emerged from the sea and travelled inland.	Leach 2020.	Possible (turtles, fish) No No Possible albeit unlikely (borrow ground only) Possible (unspecified)	Possible (turtles, fish) Possible Possible Possible Possible (unspecified)

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First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Area	EMBA
	Feature: resources including mangrove seeds, turtles, turtle eggs)  Value: it is recalled that ceremonies were conducted on islands.	Smyth 2007	Possible (turtles) No (other resources)  No	Possible (turtles, turtle eggs, mangrove seeds)  Possible (unspecified)
	Feature: archaeological sites on Murujuga.	McDonald 2015 McDonald 2023	No	Possible (submerged)
	Feature: archaeological sites on Enderby Island.	McDonald et al 2022a	No	No
	Feature: archaeological sites on Rosemary Island.	McDonald et al 2022b	No	No
	Feature: petroglyph and other archaeological sites at Murujuga.  Feature: archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.	Dortch et al 2019	No  Possible albeit unlikely (borrow ground only)	Possible (submerged)  Possible (submerged, highly unlikely for most evidence of faunal use to survive inundation)
Ngarla	Value: traditional knowledge recalls that Solitary Island is the petrified form of the ancestral octopus Marnmulkura.	Wanparta Aboriginal Corporation 2022	No	No
	Value: people access waters Value: use the waters for subsistence.	Brown (on behalf of the Ngarla People) v State of Western Australia, [2007] FCA 1025	No No	Possible Possible
Thalanyji	Feature: resources including fish, shellfish, crabs, crustaceans, sea urchins, turtle, dugong and flora and fauna associated with mangrove communities.  Feature: archaeological sites on Barrow Island.  Value: connection to Country.	Commonwealth of Australia 2002.	Possible (fish, turtle, dugong, invertebrates)  No  Possible (unspecified)	Possible (fish, turtle, dugong, invertebrates)  Possible (Barrow Island based on potential shoreline contact) Possible (unspecified)

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First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Area	EMBA
	Feature: resources include turtles, eggs, fish, shellfish and plants.	DBCA et al. 2002.	Possible (fish, turtle)	Possible (fish, turtle, eggs, shellfish)
	Value: traditional knowledge recalls a water snake is located in inland waters.	Hayes on behalf of the Thalanyji People v State of Western Australia [2008] FCA 1487	No (inland waters)	No (inland waters)
	Value: connection to Country. Value: transfer of knowledge. Value: access to Country.	DBCA 2022	Possible (unspecified) Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified) Possible (unspecified)
	Value: access to Barrow and possibly Montebello Islands	Hook et al. 2004.	No	Possible
	Feature: artefact scatters are located in coastal sand dunes.  Feature: burials are located in coastal sand dunes.  Value: traditional knowledge recalls a water snake is located in inland waters.	Hook 2020.	No  No No	Possible (Shoreline accumulation areas) Possible (Shoreline accumulation areas) No
	Feature: archaeological sites are located on Barrow Island.	Ditchfield et al. 2018 Paterson 2017	No	Possible (Shoreline accumulation areas)
	Feature: archaeological sites are located at Barrow and Montebello Islands.  Feature: archaeological evidence of the use of resources including fish, turtles, marine mammals, crocodiles, crabs and sea urchins.	Dortch et al. 2019.	No  No	Possible (Shoreline accumulation areas—Barrow Island) Possible (submerged, highly unlikely for most evidence of faunal use to survive inundation)

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First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Area	EMBA
	Feature: thalu ceremonial sites for the increase of turtle, shark, ray, fish, squid, octopus, hill kangaroo and emu.  Feature: ceremonies. Value: connection to Country. Value: transfer of knowledge. Value: access to Country.	DBCA 2022	No  No Possible Possible Possible	No (ceremonial use) Possible (submerged thalu sites e.g., petroglyphs) No Possible Possible Possible
Unspecified	Feature: the ocean can include sacred sites and songlines. Value: people have kin relationships to important animals, plants tides and currents.	Smyth 2008	Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Feature: archaeological sites in submerged landscapes.	Bradshaw 2021.	No	Possible
	Value: sea country has customary law defining ownership and management rights and responsibilities.	Muller 2008.	Possible (unspecified)	Possible (unspecified)
	Value: knowledge of Sea Country Value: connection to Sea Country Value: care for Sea Country Value: the extent of Sea Country is determined by the travels of dreaming ancestors. This is recorded and conveyed through songlines.	Kearney et al 2023.	Possible (unspecified) Possible (unspecified) Possible (unspecified) Possible (unspecified)	Possible (unspecified) Possible (unspecified) Possible (unspecified) Possible (unspecified)
	Feature; archaeological sites indicate that islands were occupied prior to sea level rise.	DBCA 2020	No	Possible (submerged)

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First Nations Group	Features and Values	Source	Potential for overlap	
			Operational Area	EMBA
	<p>Value: sea country includes values, places, resources, stories and cultural obligations.</p> <p>Value: activities relating to resources included:</p> <ul style="list-style-type: none"> <li>• Dugong hunting;</li> <li>• Turtle hunting;</li> <li>• Turtle egg collecting;</li> <li>• Seabird egg collecting;</li> <li>• Spearing fish;</li> <li>• Reef trapping fish;</li> <li>• Herding fish;</li> <li>• Line fishing;</li> <li>• Collecting fish in stone fish traps;</li> <li>• Poisoning fish;</li> <li>• Gathering shellfish and other marine resources.</li> </ul>	Smyth 2007	Possible	Possible
	<p>Value: people have kinship relationships with every plant and animal.</p> <p>Value: certain species, including fish and seafood, must not be eaten during initiation rituals due to their sacredness to the creation being Barrimirndi. Breaking this law may lead to cyclones.</p>	Juluwarlu 2004	Likely to occur	Likely to occur
	<p>Feature: tangible and intangible heritage.</p> <p>Feature: archaeological evidence of varied occupation and adaptation.</p>	Macfarlane and McConnell 2017	Possible (unspecified)	Possible (unspecified)
	<p>Value: a distinct way of life centred around the use of limited water and coastal resources.</p>		No	Possible (submerged, highly unlikely for most evidence of faunal use to survive inundation)
			No	Possible (unspecified)

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### **Cultural features and heritage values identified in other assessments**

In addition to publicly available literature, Woodside has reviewed its own publicly available Cultural Heritage Management Plan (CHMP) which was developed in consultation with MAC for the nearshore installation of the Scarborough trunkline. The CHMP identifies a list of features which may hold heritage values. Not all features on this list, included in Table 5-7 of the CHMP, exist in the area relevant to the CHMP or in the EMBA for this EP.

The features listed in the CHMP include, at the highest level:

- A Tangible Heritage
- B Ethnographic sites
- C Intangible Heritage
- D Heritage Landscapes
- E Features with National Heritage Values
- F Features with Outstanding Universal Values
- G Submerged heritage
- H Features with values to neighbouring groups

Features described by items A to G are discussed for the purposes of this EP elsewhere in Section 4.9.1. Item H in the CHMP recognises that Traditional Custodians of Country beyond Murujuga may hold values such as those in items A-G. Given the scope of relevant persons considered under this EP (relevant persons consulted in the course of preparation of this EP have interests in the EMBA which extends well beyond Murujuga), the distinction between cultural heritage on Murujuga and beyond Murujuga is not considered meaningful. Where features were noted to exist in or near the area relevant to the CHMP, Table 4-17 below considers their relevance to the EMBA.

**Table 4-25: Values identified in the Scarborough Cultural Heritage Management Plan (Woodside 2023b)**

Feature		Identification in the CHMP	Relevance to the EMBA
A.1.a	Petroglyphs	Noted onshore only.	The EMBA overlaps the Ancient Landscape where these features may exist.
A.1.b	Artefact scatters	Archaeological assessment of the submerged landscape (UWA 2021) assessed the likelihood of impacting potential archaeological Indigenous heritage such as artefact scatters/middens in the nearshore or offshore Development Envelope as low to nil.	The EMBA overlaps the Ancient Landscape where these features may exist.
A.1.d	Middens		
D.3	Submerged calcarenite ridges	Calcarenite features at the edge of the continental shelf are young enough that they may include artefacts, but these features are covered by modern sediments and marine growth, and the trunkline will be installed over this. These calcarenite ridges will be crossed by the trunkline.	Exists within EMBA
A.1.b.i	Site 19675 (Tool Shed)	Noted onshore only.	Outside of EMBA
B.1	Features with spiritual values	It was concluded that ethnographic sites with spiritual values exist outside	No ethnographic sites have been identified within the EMBA.

Feature		Identification in the CHMP	Relevance to the EMBA
B.2	Features with social/cultural values	of the Development Envelope (Mott 2019, McDonald and Phillips 2021). No impacts from the Project to ethnographic sites were foreseen during these consultations.  It was concluded that ethnographic sites which may have social and cultural values exist outside of the Development Envelope (Mott 2019, McDonald and Phillips 2021). No impacts from the Project to ethnographic sites were foreseen during these consultations.	
B.1.a	Songlines	It was concluded that ethnographic sites and features connected to songlines exist outside of the Development Envelope (Mott 2019, McDonald and Phillips 2021). No impacts from the Project to ethnographic sites were identified during these surveys.  Woodside notes that trunklines and other infrastructure including shipping channels already exist in close proximity to the proposed trunkline route, and if there were to be any impacts to surviving songlines these would be significantly more likely to be described as qualitative (i.e. “weaken” a songline) rather than binary or absolute (i.e. destroy a songline).	Areas identified in the CHMP with connection to songlines or stories were limited to onshore locations and islands not included within the EMBA.
C.1.b	Stories		
B.2.a	Places for which access must be preserved	Noted onshore only.	Limitation of access is a relevant consideration within the EMBA.
C.1	Living culture	The continuous living culture of Murujuga is a component of the Outstanding Universal Values proposed as a justification for World Heritage Listing.	Ongoing access, connection to Country and transfer of knowledge are relevant considerations for the EMBA
C.1.a	Customs	Consultation with MAC has identified concerns about the movement of rocks to and from Country as requiring consultation with representatives of other areas.	Relevant consideration for PPA where rocks are locally sourced.  Not relevant to internationally sourced rocks.
C.2.a	Animals of medicinal/food/economic value	Miscellaneous values as identified in MAC 2021.	The relevant values of MAC 2021 are considered in Section 4.9.1.5.3.
C.2.c	Plants		
C.2.c.i-vi	Plants (misc values)		
D.1	Conservation zones	Noted onshore only.	Outside of EMBA
D.4	Submerged hills	Archaeological assessment of the submerged landscape (UWA 2021) identified submerged hills which may have archaeological or other heritage values.	Exists within EMBA

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Feature		Identification in the CHMP	Relevance to the EMBA
D.5.a	Rivers	<p>Archaeological assessment of the submerged landscape (UWA 2021) identified a submerged river which may have archaeological or other heritage values but confirmed that the trunkline does not cross this feature.</p> <p>Review of SSS data (Nutley 2022b) concluded that “In the middle shelf and outer shelf there were no indicators of former riverbeds, creek lines or lakes with which [any archaeological] feature may be associated.”</p>	The EMBA overlaps the Ancient Landscape where these features may exist.

#### 4.9.1.5.2 Studies of Cultural Features and Heritage Values

##### **First Nations Archaeological Heritage Assessment**

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

It is understood that the sea level has risen significantly during the 65,000 years of First Nations occupation, and areas that were once inhabited are now submerged on the continental shelf (Veth et al 2019; UWA 2021). Woodside also understands that, at its lowest level during First Nations occupation, sea level was between 125 m (O’Leary et al 2020, Veth et al 2019, Williams et al 2018) and 130 m below current levels (Benjamin et al 2020, Benjamin et al 2023, UWA 2021). Archaeological material preserved on the Ancient Landscape has the potential to provide further information about the earliest periods of human occupation (Veth et al 2019; UWA 2021).

Recent archaeological discoveries demonstrate that the now submerged landscape was occupied and inhabited, and can retain archaeological material from this time (Benjamin et al, 2020; Benjamin et al 2023; see Ward et al 2022 for an opposing view).

In recognition of this, Woodside considers the Ancient Landscape between the mainland and the Ancient Coastline KEF (see Table 4-19) as an area where potential First Nations archaeological material may exist on the seabed, as this covers the full extent of this possible First Nations occupation. The Operational Area intersects part of the Ancient Landscape but also extends beyond the furthest extent of the Ancient Landscape.

Archaeological material on the Ancient Landscape is a relevant matter for the proposed activity given the overlap, and potential for seabed disturbance related to planned trunkline installation activities and therefore potential for impacts to archaeological material. Woodside undertakes desktop assessments of archaeological potential, based on geophysical and bathymetric data, for any seabed disturbance at depths of less than 130 m. These assessments did not identify any archaeological sites or values in Commonwealth waters that may be impacted by the Petroleum Activities Program.

Known First Nations heritage places including archaeological sites may be protected subject to declarations under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, *Underwater Cultural Heritage Act 2018* or EPBC Act 1999. However, these Acts only extend protection to First Nations heritage places specified by declaration or otherwise included on a statutory list. Woodside understands that there is no First Nations archaeology known to exist anywhere within Commonwealth waters and no areas subject to 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 54 Registered Aboriginal Sites and 40 Other Heritage Places in the EMBA (see Appendix H).

Woodside has conducted extensive assessments described below (along with consultation) to adequately understand and describe the existing environment. However, if relevant new information on cultural values is received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.6).

Where First Nations 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.

#### Existing Research and Desktop Assessment

In Australia until recently, the consideration of submerged archaeological sites has generally focused on the sub-discipline of maritime archaeology with connection to Australian Indigenous archaeology through studies of Indigenous fish-traps, whaling stations and shipwreck survivor camps. However, with the exception of Indigenous fish traps in intertidal zones, the consideration of Indigenous heritage sites submerged by post-glacial sea-level rise has only recently been considered (Mott, 2019).

There has been long and continuous occupation of the coastal Pilbara region as evidenced by scientific studies (Balme et al., 2009; McDonald et al., 2018; Veth et al., 2017). Petroglyph motifs feature a range of subject matter with many examples depicting extinct fauna and early stylistic techniques (McNickle, 1984; McDonald, 2005; Mulvaney, 2009, 2010, 2013).

In order to assess and define potential for preservation of submerged Late Pleistocene and Holocene sediment bodies that may contain preserved archaeological deposits, modelling on continental shelf development in the Dampier Archipelago has been undertaken. Analysis and modelling between the Last Glacial Maximum, through the Holocene marine transgression and up to the present day has shown that archaeological materials, if present, would most likely be evident in deposits associated with the early phases of inundation of the Dampier Archipelago, dating from around 9 to 7 ka before present (BP) (Ward et al., 2013). In contrast, the study proposes that coastal archaeology older than about 12 ka BP, when the post-glacial sea levels were below about 50 m, will have been exposed to a phase of faster tidal currents on the continental shelf, and hence eroded or poorly preserved (Ward et al., 2013). These areas of hypothesised lower preservation potential includes most of the Operational Area relevant to this EP (See Table 3-3).

A paper examining terrestrial analogy as a predictive tool for targeting submerged archaeological sites, provides several key elements to consider when examining the potential for identifying and managing submerged Indigenous heritage sites (Veth et al., 2019). Analysis of more than 2,500 known archaeological sites from the Dampier Archipelago reveals that the vast majority are rock art sites, but these are interspersed by a significant number of artefact scatters, myriad stone structures, shell middens, and quarry and reduction areas. The majority of these sites are focused on coastal and interior valleys, associated uplands, and coastal embayments. While over two thirds of sites occur on granophyre and basalt substrates, the others are located on quaternary sediments. Regional research on nearby continental islands shows that use of these environments can be expected to pre-date sea-level rise (Veth et al., 2019).

Through the Deep History of Sea Country (DHSC) project, researchers undertook a systematic and hierarchical approach to underwater investigation of the submerged landscapes at Murujuga (Dampier Archipelago). The researchers looked at the previously recorded Indigenous heritage sites from terrestrial surveys and used principles of geological, geomorphological and environmental associations to extrapolate to submerged landscapes. Where possible, the research considered submerged landscape principles as comparable but recognised that a range of factors may affect direct comparisons. A major constraint to any comparative studies is the shortage of marine stratigraphic, paleo-environmental, or geochronological data, and thus comparisons were initially divided into hard (crystalline) rock and soft (sedimentary) rock contexts, with the relative age of a

potential site or deposit based on bathymetry (i.e., depth below modern sea level) and morphological setting. These essentially inform and delineate prospective target areas for broad-scale underwater mapping (Veth et al., 2019).

The sites considered most likely to survive inundation, based on the review of existing literature, were logically the more robust forms including:

- midden and artefacts within cemented dunes, relict water holes, and beach rock deposits
- quarry outcrops, extraction pits, and associated reduction debris in fine-grained volcanic outcrops
- curvilinear stone structures and standing stones sitting on volcanic pavements and jammed into volcanic rock piles
- lag deposits of artefacts and possibly midden on hardpan in suitable landscape contexts with good preservation conditions (e.g. shallow declination shorelines in sheltered passages of the inner archipelago or on the leeward side of hard-rock/fringing reef cause-ways adjacent to the outer islands)
- small overhangs and shelters with preserved deposits, facing away from the dominant wave and wind action. (Veth et al., 2019)

Geotechnical sampling along the proposed pipeline route has shown that sediments are predominantly comprised of soft silty sands and therefore those landforms other than the first are highly unlikely to be present along the pipeline alignment. Rocks such as the dolerites, gabros and other volcanic rocks on which Murujuga rock art is found are not present in the Operational Area.

Integrated Heritage Services was engaged by Woodside to conduct an Indigenous heritage desktop investigation and initial ethnographic consultations with Traditional Custodian representatives, for the offshore and landfall component of the project (Mott, 2019). Subsequent to the finalisation of Mott (2019), the conclusions of Veth et al (2019) were tested through direct inspection with DHSC divers which led to the discovery of two locations with Indigenous underwater cultural heritage (Benjamin et al., 2020) in Flying Foam Passage and Cape Bruigeres in State waters outside the EMBA. This conclusively demonstrated the potential for underwater cultural heritage (UCH) to exist on the NW Shelf and highlighted the need to assess the potential impacts of offshore developments on submerged heritage landscapes (UWA, 2021).

MAC was consulted during the development of the Scarborough Project (Nearshore Component) Dredging and Spoil Disposal Management Plan (DSDMP) which included Commonwealth activities for full activity context (e.g., trenching and spoil disposal; and borrow ground dredging and associated backfill) that are pertinent to this EP. As a part of the DSDMP consultation, MAC advised that DHSC had identified two areas considered “culturally prospective”:

*The first is the Madeline [sic] Shoals, which... is formed of the same igneous geology as the other areas of the archipelago where sub-tidal archaeological sites have been found. The second area is a 3 km wide relict submerged paleo beach barrier system that extends across the northern entrance to Mermaid Sound, over which the proposed trunk line route passes. This is an area of hard grounds... with high potential to contain Aboriginal lithic materials cemented within the deposits.*

Scarborough Pipeline Cultural Heritage Assessment (UWA, 2021)

Following the recommendations of Mott (2019), Woodside engaged with the DHSC project from mid-2019. Woodside subsequently engaged researchers from the then-concluded DHSC project based at the University of Western Australia (UWA) to assess the prospectivity for archaeological sites along the Scarborough pipeline route and adjacent areas, beginning at the Burrup Peninsula and ending at the edge of the continental shelf in consultation with MAC (UWA, 2021).



The UWA Indigenous UCH assessment along the proposed Scarborough Pipeline route developed a predictive model for the potential for UCH to be located within the submerged landscapes along the Scarborough trunkline route (UWA, 2021). The study concluded that the Scarborough pipeline route is likely to have “low to nil impacts” to Indigenous archaeological values across the project footprint in Commonwealth waters (UWA, 2021).

The middle shelf landscape crossed by the proposed pipeline was determined to be of very low or no likelihood of impact to Indigenous archaeological values and “The current development envelope is the preferred pipeline route within mid shelf” (UWA, 2021). The assessment noted that “The mid shelf is flat, relatively featureless and covered by a thick layer of recent marine sediments. The absence of definable landscape features, exacerbated by marine sediment cover observed along the 300m wide survey corridor makes this 30m wide pipeline development corridor low prospectivity for any residual, in situ, surface manifestations of Indigenous heritage” (UWA 2021). Two “low relief beach ridge and beach barrier features” that were identified were considered to predate the 65,000 years of scientifically verified occupation of the Australian continent and “Therefore, they are likely to have a low prospectivity for cultural heritage being captured in these durable surfaces at formation, and similarly low potential for subsequently deposited cultural material having survived initial inundation and subsequent marine pedogenic forces.” (UWA 2021). The assessment also identified within the EMBA “two mounds which are interpreted as low relief hills of an unknown geology, each more than 15km from the proposed pipeline envelope” (UWA 2021).

Although the outer shelf possesses a highly prospective cultural landscape, the assessment concluded “Scarborough pipeline development is likely to have nil to low impact on any potential heritage values and the current development envelope is the preferred pipeline route here” (UWA, 2021). Within the EMBA, “There are several locations at the outer edge of the continental shelf where the reconstructed submerged landscapes are assessed as having high potential for significant heritage being present... These high potential landscape features are especially notable to the north of the proposed pipeline. If submerged heritage was to be encountered here, it would be of high significance, and we have identified several sections of the route where this possibility is greater than elsewhere.” For clarity, the assessment also notes that “While there are landforms and features that were identified on the seabed as having a higher probability of hosting indigenous UCH and would benefit from direct observations via ROV/AUV, these have not been identified within the proposed pipeline route.” (UWA 2021) and “The current pipeline alignment avoids several higher value landforms which increased heritage sensitivity (i.e., karst depressions, tidal channels) in proximity to the pipeline.” (UWA 2021).

The EMBA also includes areas of the inner shelf where “development proposal is likely to have nil or very low impact on any places with heritage values. The identification of more prospective submerged landscapes across this inner shelf, make the current proposal the preferred pipeline route within Mermaid Sound.” (UWA 2021). The inner shelf includes “submerged barrier systems which outcrop at the seabed.” (UWA 2021). The assessment noted these were dated “between 80,000 to 130,000 years BP and 186,000 to 245,000 years BP. Given these early ages it is unlikely that these barriers formed as an active cultural landscape and therefore these are unlikely to be prospective for encapsulated archaeological evidence. While it is possible that people may have occupied these exposed landscapes at any time in the last 65,000 years, the absence of water or other attractors associated with these identified low relief limestone-ridge landscapes lowers this potential, while their exposed nature makes for low survival chances of artefactual deposits laid on these exposed hard surfaces” (UWA 2021).

The inner shelf includes “no palaeochannels, relict waterholes, clay pan features, or igneous rock outcrops – such as can be observed in other parts of the Dampier Archipelago –that have been identified as hosting or potentially hosting cultural heritage sites” (UWA 2021). While “The palaeochannels of the Maitland River and Nicoll River are identifiable on the seabed to the south of Enderby Island and the east of the Archipelago on the inner shelf... The proposed pipeline transects neither of these palaeochannels – nor any submerged mounds/hills (i.e., features of

potential mythological significance to the Ngarda ngarli) that can be identified from the bathymetric reconstruction.” (UWA 2021).

#### Side Scan Sonar Review (Nutley 2022)

At the request of MAC, a review of existing side scan sonar data for the Operational Area on the Ancient Landscape was undertaken by a maritime archaeologist (Nutley 2022), with a particular but not exclusive focus on submerged fish traps. Although the remote sensing data was not targeted specifically at underwater cultural heritage when originally collected, the review noted the data was sufficient to provide a platform for assessing features that may require further investigation (Nutley 2022). This review included the barrier systems identified in UWA (2021) in the mid- and inner shelf.

This review identified numerous clusters of depressions which are “certainly naturally occurring features” and “none of them appear to be archaeological in nature” but requested further advice on what these represented to better understand the landscape and whether these were permanent features such as karsts. Woodside considers from existing data and previous investigation that these depressions in sandy sediments are a result of marine life and moving fluids. The report concluded: “No indication of stone structures such as fish traps, or hut foundations could be detected in the inner reef, middle shelf or outer shelf areas. In the middle shelf and outer shelf there were no indicators of former riverbeds, creek lines or lakes with which such feature may be associated.” (Nutley 2022).

#### ROV Inspection of Barrier Systems (Nutley 2023a)

MAC requested that calcarenite ridges on the inner shelf be directly inspected where the trunkline would be installed in State Waters. This installation is subject to separate approvals outside this EP, although the EMBA for activities under this EP does extend into state waters. Direct inspection in these areas was completed by ROV with the participation of a qualified marine archaeologist and representative of MAC (Nutley 2023a). No instances of potential cultural heritage material were detected during these inspections (Nutley 2023a).

The investigation “confirmed the presence of the former calcarenite, coastal barrier ridgelines that would have been exposed prior to inundation following global warming and substantial melting of the icecaps” (Nutley 2023a). It was noted that any stone tools “would have been subject to tidal movements, currents and storm waves and to have been redeposited into the ravines and valleys between the ridges. The geodetic data for the area shows that such ravines and valleys are filled with post-inundation marine sediments of up to five or more metres in depth.” (Nutley 2023a). The assessment also found “No evidence of former waterways or subsea springs or river valleys were present at the surface of the seabed.” (Nutley 2023a).

#### Borrow Ground Underwater Cultural Heritage Assessment (Nutley 2023b)

In State Waters, impacts to Indigenous archaeological heritage are managed under the Scarborough Project Cultural Heritage Management Plan<sup>4</sup> (Woodside 2023). Although activities in Commonwealth Waters are not managed under this plan, it does include a description of Borrow Ground activities at the request of Traditional Custodians. This plan notes that “Borrow ground dredging will be limited to marine sediments (i.e., will not impact the ancient land surface where people may have lived or travelled)”. As described in Section 3.9.4 this is due to the targeted depth of dredging within the Offshore Borrow Ground.

Archaeological assessment of the borrow ground was undertaken by a maritime archaeologist (Nutley 2023b) based on previous studies, available geophysical and geotechnical data, historical research and the nature of the proposed activities in the borrow ground. This assessment noted:

*The assessed risk of impact to UCH arising from the proposed dredging within the borrow field is low. This risk rating has been determined through:*

<sup>4</sup> available online [Scarborough Project Cultural Heritage Management Plan](#)

*Geophysical and geotechnical information that indicates a relatively uniform deposit of sandy sediments across the borrow field and consisting of 1-2 m depth of coarse sand above variably cemented calcarenite.*

*Currently available geophysical survey data does not identify any indicators for the presence of UCH, including pre-inundation landscapes, shipwrecks or other features with cultural associations.*

The assessment concluded that there is a low risk of potential impact on UCH arising from the proposed dredging activities within the Offshore Borrow Ground. However, the assessment noted that full coverage of Offshore Borrow Ground is not currently available. An additional survey is considered in Section 6.10 to address this gap. Should the data or feedback identify new information on cultural values, it will be assessed and, where appropriate, Woodside will apply its Unexpected Finds Procedure (Section 7.7), engage the MAC Heritage Management Committee (Section 7.5) and implement the Management of Change and Revision process (Section 7.15).

### **First Nations Ethnographic Heritage Assessment**

Ethnographic surveys are a form of heritage survey conducted by anthropologists or ethnographers to understand cultural features of heritage significance and heritage values within a landscape. This is distinguished from archaeological survey (which focusses on the material remains of human culture) and consultation (which is not confined to an assessment of heritage, is not limited to values of a landscape and may be conducted without an ethnographic methodology).

*Ethnographic surveys are undertaken to identify Aboriginal cultural heritage sites and values that are identifiable as tangible and intangible elements that are important to the Aboriginal people of the State, and are recognised through social, spiritual, historical, scientific or aesthetic values, as part of Aboriginal tradition.*

*To achieve this, an ethnographic survey is undertaken with an Aboriginal person or persons who in accordance with Aboriginal tradition, holds particular knowledge about the Aboriginal cultural heritage and has traditional rights, interests and responsibilities in respect of the Aboriginal cultural heritage (Mott 2023).*

Woodside seeks to undertake ethnographic surveys where planned impacts overlap an area where First Nations group has an established cultural jurisdiction over an area of land or sea. Cultural jurisdiction is essential to ensure ethnographic survey participants “in accordance with Aboriginal tradition, hold particular knowledge about the Aboriginal cultural heritage”, and may be established through a number of mechanisms, including prescription under heritage legislation (e.g. Local Aboriginal Cultural Heritage Services under the Western Australian *Aboriginal Cultural Heritage Act 2021*), recognition through the determination of Native Title rights, or through land access agreements including ILUAs or ILUA-like agreements.

Where ethnographic surveys are requested during broader consultation in which a relevant person articulates their cultural jurisdiction, Woodside will assess this request and, where appropriate, undertake surveys. Surveys may not be appropriate, for example, where another party has established cultural jurisdiction or an adequate ethnographic survey has already been carried out over the area.

As ethnographic surveys are dependent on the participation of traditional knowledge holders, it is not possible to meaningfully conduct ethnographic surveys proactively over areas for which cultural jurisdiction is not established or unclear.

To supplement understanding of the area subject to MAC’s cultural jurisdiction, Woodside commissioned ethnographic surveys in 2019 and 2020 to support the Scarborough Project (Mott 2019, McDonald and Phillips 2021). Woodside has committed to support MAC with further ethnographic work, but MAC has not yet elected to progress this work.

An ethnographic survey may determine both the tangible and intangible cultural heritage which may be associated with cultural features. Importantly, ethnographic surveys are only one tool in identifying

cultural features and heritage values; Woodside has supplemented this work with archaeological assessments described in Section 4.9.1.5.2 and extensive consultation with Traditional Custodians described in Section 4.9.1.5.3. Typical results from ethnographic surveys 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. As a form of heritage survey, distinct from more general consultation, surveys were limited to discussions of the relevant landscape. However, participants were not restricted in the types of tangible and intangible cultural heritage they were encouraged to identify.

*Preliminary Desktop Assessment and Ethnographic Inspection (Mott 2019)*

The 2019 survey was undertaken due to the potential planned impact of offshore, nearshore and onshore activities associated with the Scarborough project within the cultural jurisdiction of Ngarda Ngarli people, traditional custodians of Murujuga. The survey was conducted with members of all five Traditional Custodian groups of Murujuga (Mardudhunera, Ngarluma, Wong-Goo-Tt-Oo, Yaburara and Yindjibarndi) invited through Prescribed Bodies Corporate for Ngarda Ngarli people (including NAC and WAC) and MAC, who met on country with heritage consultants.

The aim of this aspect of the work was “to undertake an initial ethnographic site visit to consult with traditional owners to discuss the current research undertaken by others on submerged landscapes generally, and to seek specific feedback on the nature of the proposed pipeline plans including the pipe landfall area, adjacent to a significant Aboriginal heritage site” (Mott 2019). Participants were provided with a map of the Scarborough development (Figure 4-18) and asked to identify any values in the surrounding landscape.

No cultural features or heritage values were identified in the Operational Area or EMBA through this survey (Mott 2019).

Within the recommendations arising from this work, it was advised “If any deviations from the current Project Area footprints are made, addendum desktop heritage assessment and consultation with traditional owners should be undertaken.” The desktop component of Mott (2019) related to archaeological heritage, and subsequent archaeological assessments are described in Section 4.9.1.5.2.

Consultation with Traditional Custodians for the project, including to understand the broader cultural values of the Borrow Ground, have been undertaken as described in Section 4.9.1.5.3 and Section 5.

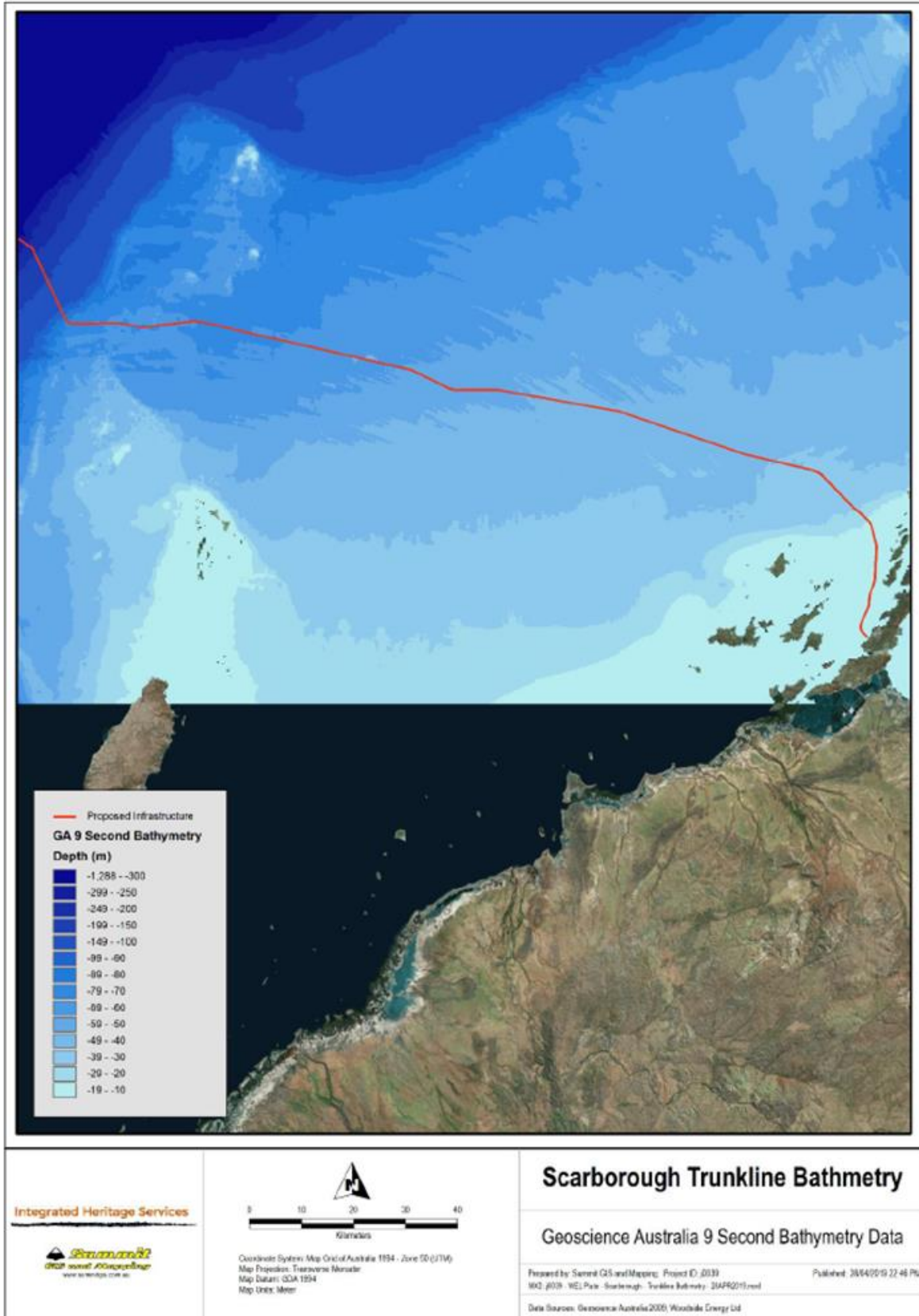


Figure 4-18: Scarborough Development Extent considered in the 2019 Ethnographic Survey – Source Mott (2019)

*Ethnographic Consultation (McDonald and Phillips 2021)*

The 2020 survey was undertaken due to the potential planned impact of offshore, nearshore and onshore activities associated with the Scarborough project within the cultural jurisdiction of Ngarda Ngarli people, traditional custodians of Murujuga. The 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).

The scope of works for this survey defines the purpose of this survey as follows:

*The ethnographic consultation aims at providing an understanding of the cultural heritage values associated with the submerged landscape.*

*Specifically, the survey and reporting will provide Woodside understanding of the cultural values within the coastal, nearshore and offshore proposed Scarborough trunkline and associated works areas.*

The scope of the assessment was informed by the Scarborough project's development footprint as provided in Figure 4-19 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. As an indication of the breadth of the cultural landscape that the survey considered, cultural features and heritage values were identified more than 60km from the development footprint.

Participants were shown an introductory video explaining the key parameters of the Scarborough project including the proposed pipeline (McDonald and Phillips 2021). The survey identified ethnographic sites onshore, but these are outside the Operational Area and 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 in State waters, outside of the EMBA and exclusively onshore. Some of these sites have spiritual connections and songlines 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 EMBA. It was noted that some traditional knowledge of ethnographic values may have been lost through the effects of colonisation generally, and as a result of the Flying Foam Massacre in particular (McDonald and Phillips 2021).





**Figure 4-19: Scarborough Development Extent considered in the 2020 ethnographic survey**

Source: McDonald and Phillips 2021

### Future Ethnographic Surveys

McDonald and Phillips (2021) represents the findings of Phase I of a planned two-part ethnographic survey, and recommends that the Phase II ethnographic survey be initiated. The second phase goes beyond industry standard by engaging with neighbouring First Nations groups to identify potential ethnographic values that traverse traditional group boundaries. Per Appendix F, Table 1, Woodside has communicated its commitment to the Phase II survey to MAC on multiple occasions, is ready to progress these at MAC’s earliest availability, and believes it has taken all reasonable steps to progress the Phase II survey. MAC has not yet elected to progress this work.

Phase I of the ethnographic survey was run by MAC, and the scope of this survey required “Full recording and significance assessment. The consultant is to provide advice as to whether there are cultural values within and nearby the footprint area...” Discussion with MAC’s then CEO has confirmed that MAC do not consider that they have failed to deliver on this scope. The survey was conducted with members of MAC’s Circle of Elders, who are recognised as cultural authorities for Murujuga, and the final report was approved by the Circle of Elders prior to being provided to Woodside.

Therefore, Woodside understands the Phase I works to adequately describe and assess the cultural, spiritual, aesthetic and social values held by Traditional Custodians for the project area and surrounding land and seascape. Woodside does not consider the Phase II works to be necessary to the construction of the Scarborough Project.

Woodside has also conducted extensive engagement with appropriate representatives as determined by MAC over the course of several years as well as a number of neighbouring Indigenous First Nations groups and representatives as detailed in Section 5. As reported in Section 4.9.1.5.3,

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this consultation with MAC has resulted in the detailing of cultural values beyond the heritage values that may be identified through ethnographic survey, and in greater detail than the results of ethnographic survey to date. On 21 July 2023, MAC advised by letter that MAC “have no concerns at this point in time” regarding the proposed activities subject to this EP.

Beyond MAC, no Indigenous group has articulated cultural jurisdiction over any area of waters subject to impacts from planned activities. BTAC has stated that their Sea Country extends “out to the vast islands off the coast of the Pilbara, including the Monte Bello Islands, Barrow Island, and the Mackerel Islands.” These locations are outside of the extent of planned impacts. A review of publicly available literature has been undertaken to seek clarity on the extent of Sea Country for Thalanyji people in Section 7.6 and has not identified any areas recorded as Thalanyji Sea Country which overlap the extent of proposed impacts.

Woodside has offered support, through ongoing consultation, for initiatives proposed by Traditional Custodians to record Sea Country values (see Program of Ongoing Engagement with Traditional Custodians, Appendix L).

Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received (including any relevant new information on cultural values from the Phase II survey or other sources), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.7).

#### 4.9.1.5.3 Consultation Feedback to Inform Existing Environment

##### **Summary of values raised during consultation**

A summary of the topics/interests and values raised by First Nations groups through consultations on this Petroleum Activities Program, or raised in context of general Scarborough Project activities or other activities are provided in Table 4-18.

First Nations cultural values are communally held. This is reflected in Vision 3 of Dhawura Ngilan that “Aboriginal and Torres Strait Islander heritage is managed... according to community ownership” (Heritage Chairs of Australia and New Zealand 2021). Dhawura Ngilan also specifically notes that “Aboriginal and Torres Strait Islander... intangible knowledge systems, which are held in songlines and language, are endangered. This knowledge is held by Elders and the community...” Through consultation Registered Native Title Bodies Corporate and nominated representative corporations have identified or raised topics relating to environmental values of cultural interest. Woodside recognises the deep spiritual and cultural connection to the environment<sup>5</sup> that First Nations people hold.

The Program of Ongoing Engagement with Traditional Custodians (Appendix J) provides a mechanism for ongoing dialogue between Woodside and Traditional Custodians, beyond that required by regulation 11A. The program enables Woodside to manage the potential impacts and risks to cultural values which may be identified at any time during Woodside’s activities via ongoing dialogue with Traditional Custodians. As an example, Woodside is developing a framework for ongoing consultation with BTAC and other groups (Appendix J). 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 7.15).

<sup>5</sup>Definition of ‘Environment’ in Regulation 4 of the OPPGS (Environment) Regulations are defined as:

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



**Table 4-26: Feedback Received via Consultation to Inform Existing Environment Description**

Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
BTAC representing some of the Gnulli native title claimants (Baiyungu and Thalanyji people)	Raised in context of general Scarborough Project activities	Value: Cultural obligation to care for the environmental values of sea country	Possible (unspecified)	Possible (unspecified)
		Sea country extends “out to the vast islands off the coast of the Pilbara, including the Monte Bello Islands, Barrow Island, and the Mackerel Islands”	No	Possible (unspecified)
Karajarri Traditional Lands Association	No values raised	-	-	-
Kariyarra Aboriginal Corporation	Raised in context of general Scarborough Project activities	Interest: Assertion of sea rights in native title claim area <i>Interpreted as general connection to country, assertion of rights to access country and cultural obligation to care for environmental values of sea country</i>	No	Yes
Kimberley Land Council (KLC)	No values raised	-	-	-
Malgana Aboriginal Corporation	Raised in context of general Scarborough Project activities	Interest: Shark Bay environment is unique and has the largest living organism in the world	No	No
		Feature: Stromatolites Interest: Shark Bay contains stromatolites and microbial mats which are amongst the oldest living in the world.	No	No
		Interest: Seagrass For Shark Bay Malgana Aboriginal Corporation stated that they had observed a nearly 25% loss of seagrass from a hypersaline discharge into the bay	No	No
Murujuga Aboriginal Corporation representing Ngarda-Ngarli people (Mardudhunera, Ngarluma, Wong-Goo-Tt-Oo, Yaburara and Yindjibarndi)	Raised in context of Nearshore Scarborough Project activities (MAC 2021 as cited in Woodside 2023)	Value: Mermaid Sound ecosystem health	No	Possible
		Feature: Whale Value: A whale Thalu is an increase at a totemic site that brings whales into beach	Possible (whale) Possible (unspecified)	Possible (whale) Possible (unspecified)
		Value: Whales and other species of totemic importance need to be protected, including their populations, biodiversity, and migration patterns	Possible (whales) Possible (unspecified; other species)	

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		Value: Whales are culturally important species that migrate through Mermaid Sound. Humpback whales in particular.	No (based on defined location)	Possible (whales) Possible (unspecified; other species) Possible
		Feature: Dolphins Value: There are cultural ceremonies associated with communicating with dolphins	Possible (dolphins) Possible (unspecified)	Possible (dolphins) Possible (unspecified)
		Feature: Dugongs Value: Are a food source associated with seagrasses near Gidley Island	Possible (dugongs) No (based on defined location)	Possible (dugongs) No (based on defined location)
		Feature: Fish Value: There are Thalu ceremonies associated with increasing fish stocks	Possible (fish) Possible (unspecified)	Possible (fish) Possible (unspecified)
		Feature: Sea snakes Specifically mentioned as culturally important species	Possible (sea snakes)	Possible (sea snakes)
		Feature: Flatback, green, hawksbill, loggerhead and leatherback turtles Turtles are culturally important species that moves through Mermaid Sound. Turtles are most often seen in shallower areas and where there are seagrasses Most beaches are nesting sites for turtles, including those on Gidley and Legendre Islands Value: The songline associated with the turtle comes from Fortescue to Withnell Bay. This song is sung by four or five tribes for day and night without consuming food or water	Possible (turtles) No (based on defined location) No (based on defined location) No (songline geographically restricted nearshore)	Possible (turtles) Possible Possible No (songline geographically restricted nearshore)

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		<p>Feature: Coral</p> <p>Fish are attracted to areas with coral</p> <p>Concerned about coral bleaching because corals are important. Beautiful colours. They also attract a lot of other things</p> <p>Fish carry coral spawn like bees pollinate flowers. If fish were looked after, the corals would get brighter and brighter (by transmitting nutrients and performing other ecosystem services, fish can be symbiotic with corals)</p> <p>Spawning events should be avoided (associated with full moon). Locations identified during consultation include Withnell Bay; Conzinc Bay; south west of Legendre Island</p>	No	Possible (broader EMBA) No (based on defined location)
		<p>Feature: Seagrass</p> <p>Seagrasses provide protection for animals.</p> <p>Locations identified during consultation include Conzinc Island; between Angel and Gidley Island.</p>	No	Possible (broader EMBA) No (based on defined location)
		<p>Value: Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries</p> <p>Locations identified during consultation include Conzinc Bay north end; Flying Foam Passage; Searipple Passage; north-east bay of West Lewis Island</p>	No	Possible (broader EMBA) No (based on defined location)
		<p>Interest: Macroalgal communities, which are important primary production sites, habitats, and food sources (not explicitly identified by elders)</p> <p>Interest: Subtidal soft-bottom communities, which support invertebrate diversity (not explicitly identified by elders)</p> <p>Interest: Intertidal sand and mudflat communities, which are important primary production sites, support invertebrate diversity and provide food for shorebirds (not explicitly identified by elders)</p> <p>Interest: Rocky shores, which are habitats for intertidal organisms and provide food for shorebirds (not explicitly identified by elders)</p>	No Yes No No	Possible (broader EMBA) Yes Possible (broader EMBA) Possible (broader EMBA)
		<p>Feature: Fish traps</p> <p>There are known fish traps in Conzinc Bay, and others would have or do exist in coastal areas of islands, such as Angel and Gidley Islands.</p>	No No	Possible (submerged)

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		People still use the Conzinc Bay fish traps regularly for catching mangrove jack, trevally and other fish Value: Squidding (harvesting of squid from the ocean) around Conzinc Island	No	No (based on defined location)  No
Nanda Aboriginal Corporation	Raised in a general context not specific to an EP/ Project.	Interest: Shorelines Asserted the importance of shorelines culturally and asked what would be done in the event of an oil spill to protect the shoreline	No	Possible (unspecified)
	Raised in context of general Scarborough Project activities	Interest: Whales – query regarding potential impacts to whales	Possible (whales)	Possible (whales)
Nghanurra Thanardi Garrbu Aboriginal Corporation representing Baiyungu and Thalanyji people	Raised specific to PAP (See Appendix F; Table 1) Raised in context of general Scarborough Project activities	Interest: Whales - query regarding noise impacts, monitoring and operational responses to whale sightings	Possible (whales)	Possible (whales)
	Raised in context of decommissioning activities	Interest: Whale sharks – query regarding activity timing	Possible (whale sharks)	Possible (whale sharks)
		Interest: Marine parks – query regarding risks from activity in relation to decommissioning	Yes (Montebello AMP)	Yes
Ngarluma Aboriginal Corporation (NAC)	No values raised	-	-	-
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	No values raised	-	-	-
Nyangumarta Karajarri Aboriginal Corporation	No values raised	-	-	-
Nyangumarta Warrarn Aboriginal Corporation	No values raised	-	-	-

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
Robe River Kuruma Aboriginal Corporation (RRKAC)	Raised in context of general Scarborough Project activities	Feature: Underwater heritage	No	Possible
Save Our Songlines, ██████ and ██████ ██████	Raised specific to PAP (See Appendix F; Table 1) Raised in context of general Scarborough Project activities	Feature: Songlines, dreaming and energy lines (unspecified)	Possible (unspecified)	Possible (unspecified)
		Feature: Whales – including migratory patterns	Possible	Possible
		Interest: Turtles – including migration patterns	Possible	Possible
		Interest: Dugongs - unspecified	Possible	Possible
		Interest: Plankton - unspecified	Possible	Possible
		Interest: Seagrass - unspecified	No	Possible
	Interest: where saltwater and freshwater meet	No	Possible	
	Raised in Concise Statement and Affidavit <sup>3</sup> in context of Scarborough seismic activities	Value: Caring for Country ██████ asserts holders of women’s lore with cultural obligations to protect, preserve and promote the environment, animals and plants threatened by the Activity (specific to Seismic) ██████ asserts the spiritual health and wellbeing of Murujuga and all the plants and animals present on Murujuga and connected to the songlines in and around Murujuga	Possible (unspecified)	Possible (unspecified)
Feature: Whales ██████ asserts the following values: “Whales carry important songlines, the whale Dreaming, and connection between land and sea” "As the biggest animal on earth, the whale has the greatest heart connection to songlines, people and animals and carries the songlines around the ocean, connecting places." “Whale Dreaming story has a strong connection to the heart centre in each person, this story helps people to open up and to realise, understand and raise awareness of the environment and everything humans are connected to.”	Possible (whales) Possible (songlines, unspecified)	Possible (whales) Possible (songlines, unspecified)		

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		<p>"In their own families, female whales have a caretaker or midwife role, and those who are connected to the Whale Dreaming and carry the women's lore also have obligations as caretakers of the earth."</p> <p>"The women's lore that ██████ and ██████ carry is the songline of the whale, which is important for sustaining the creation of all animals and humans."</p> <p>██████ and ██████ connect to the whales like this through their songlines, they sing to the whales, the whales feel that song and the connection through their hearts, regardless of the distance."</p> <p>"the whales tell ██████ and ██████ a story, and ██████ and ██████ are the people who feel and who are connected to that story. ██████ and ██████ have that feeling of connection inside them all the time, they live and breathe it, they are in and everything about it."</p> <p>"Because each animal uses songlines for migration, breeding and feeding, the disruption or distortion to the songlines causes the animals to become disoriented, confused or lost."</p>		
		<p>Interest: Whales Interest: Pygmy Blue whales "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to</p> <ul style="list-style-type: none"> <li>ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales</li> <li>iii. whales' sonar communications systems, particularly between mothers and calves, from sound and vibrations emitted by the Activity</li> <li>v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and</li> <li>vi. vehicle collision and/ or entanglement with marine fauna"</li> </ul>	Possible (whales)	Possible (whales)
		Interest: Turtles	Possible (turtles)	Possible (turtles)

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		<p>"Other animals, such as turtles, dolphins, dugongs, and krill follow the whale's songlines, because they're all connected together - the whale creates a path for the other animals like 'grading a road'."</p> <p>"Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to:</p> <ul style="list-style-type: none"> <li>ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales</li> <li>v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and</li> <li>vi. vehicle collision and/ or entanglement with marine fauna"</li> </ul>		
		<p>Interest: Dugongs</p> <p>"Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to:</p> <ul style="list-style-type: none"> <li>v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)"</li> </ul>	Possible (dugong)	Possible (dugong)
		<p>Interest: Pelagic fish</p> <p>"Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to:</p> <ul style="list-style-type: none"> <li>ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales"</li> </ul>	Possible (fish)	Possible (fish)
		<p>Interest: Sharks</p> <p>"Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to:</p>	Possible (sharks)	Possible (sharks)

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)"		
		Interest: Plankton "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: i. chronic mortality to some marine organisms, including zooplankton	Possible	Possible
		Interest: Water quality "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: iv. potential operational discharges associated with the presence of ships in the area, including potential impacts to water quality v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)	Yes	Yes
		Interest: Seabirds "Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)	Possible	Possible
		Interest: Where saltwater and freshwater meet "The places where the saltwater from the sea and the freshwater from the land connect are where the biggest energy lines <sup>6</sup> are, and that connection is a core of creation relevant to a Dreaming story."	No	Possible

██████████ and Save our Songlines have referred to and described Energy Lines which Woodside understands to be the same as Songlines. This document will refer to songlines from this point forward

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		Value: Rock Art "Rocks at Murujuga symbolise stories, the totems (the depicted artwork) - whether representing plants or animals - and tell a story of their history, and how long they've been there."	No	Possible (submerged)
		Value: Bungarra, Eagle, Kangaroo Identified totemic species	No	No
		Interest: Murujuga "When ██████ and ██████ and their people stand on Country they are connected to their songlines through the rocks. As holders of women's lore, ██████ and ██████ put healing energy into the rocks and use that to heal the songlines."  ██████ and ██████ connect to their bloodline, old people and songlines through Country, including the rocks at Murujuga, which are encrypted with ancient stories that keep connection to the bloodline and songlines alive and well."	No	Possible
Wanparta Aboriginal Corporation	Raised generally	Feature: Water The importance of water was emphasised by the group	Yes	Yes
		Feature: Dreamtime stories through nearshore island There are Dreamtime stories through the nearshore island (Solitary Island/Jarrkumpungu)	No	Possible
	Raised in context of general Scarborough Project activities	Interest: Ocean Value: Connection to the ocean	Yes Possible (unlikely due to distance to Operational Area)	Yes Possible
		Value: Caring for the ocean	Possible (unlikely due to distance to Operational Area)	Possible
		Interest: Freshwater	No	No
	Value: Kestrel is a totemic species as depicted on the corporation's logo	No (onshore species)	No (onshore species)	

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		Value: Octopus is a totemic species as depicted on the corporation's logo	Possible	Possible
		Value: Bream is a totemic species as depicted on the corporation's logo	Possible	Possible
		Value: Sting ray is a totemic species as depicted on the corporation's logo	Possible	Possible
		Value: People are linked to the dreaming stories through the interconnecting islands	No	Possible
Wirrawandi Aboriginal Corporation representing Ngarda-Ngarli (Mardudhunera and Yaburara)	Raised in context of general Scarborough Project activities	Interest: Whales - query with regard to whale migration and timing of Project activities; impact of noise on whale communication	Possible	Possible
		Interest: Turtles - query with regard to turtle monitoring programs	Possible	Possible
		Interest: Underwater heritage – query with regard to where sites have been recently found	No	Possible
	Raised in context of decommissioning activities	Value: Rock Art – query whether air emissions from activities impacts rock art and controls to minimise potential impacts	No	No (air emissions impact to rock art) Possible (submerged rock art)
Yamatji Marlpa Aboriginal Corporation (YMAC)	No values raised	-	-	-
Yindjibarndi Aboriginal Corporation	No values raised	-	-	-
Yinggarda Aboriginal Corporation representing Yinggarda People.	Raised in context to Scarborough project activities.	Interest: Whales – query with regard to potential impacts to whale migration patterns and impacts from vessel collision	Possible	Possible
		Value: Shark Bay Mullet – important resource	No (coastal species)	No (coastal species)
		Interest: Dugong – raised in context of Shark Bay	No (geographically limited)	No (geographically limited)

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Relevant First Nation Group /Individuals	Consultation context	Description of Value / Interest	Potential for overlap	
			Operational Area	EMBA
		Interest: Seagrass being food source for Dugong	No	Possible

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### **Murujuga Aboriginal Corporation cultural values of marine ecosystems**

Murujuga Aboriginal Corporation (MAC) was consulted during the development of the Scarborough Project (Nearshore Component) Dredging and Spoil Disposal Management Plan (DSDMP)<sup>7</sup> which included Commonwealth activities for full activity context (e.g., trenching and spoil disposal; and borrow ground dredging and associated backfill) that are pertinent to this EP. As a part of the DSDMP consultation, MAC proactively engaged the Circle of Elders to identify places, areas and values of the marine environment that are of cultural importance. MAC prepared a report titled “*Cultural Values of the Environment for Scarborough DSDMP*” which identified values of the marine environment that are of cultural importance to MAC. This work was an outcome of consultation further described in Section 5. This work is not considered an ethnographic survey, as it did not employ ethnographic survey methodology or the participation of a qualified anthropologist or ethnographer.

No specific environmental values of cultural importance were identified within the Trunkline Project Area (KP32 to KP50) or the Borrow Ground Project Area. Rather, values were identified within Mermaid Sound, which is directly relevant for the EMBA and for specific values can be inferred within the Operational Area (refer to Table 4-21).

### **Further Information regarding BTAC’s Sea Country values**

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

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

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

These requests do not constitute a request for ethnographic survey. Woodside has agreed to BTAC’s request, and the resulting offer of technical support is detailed in Appendix F, Table 1. However, Woodside’s offer for technical support has not yet been accepted.

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

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

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

An early 1940’s map by Tindale shows “Talaindji” (Thalanyji) Country as exclusively terrestrial and further west than areas typically recognised today as Thalanyji Country (Tindale 1940). This map also shows the Noala people as custodians of the Onslow area and defines Barrow and the

<sup>7</sup> available online [Scarborough Project \(Nearshore Component\) Dredging and Spoil Disposal Management Plan](#)

Montebello Islands as “Mardudunera” (Mardudhunera) Country—it is unclear from the map if the boundary of Mardudhunera is proposed to represent an extent of Sea Country, or merely note that these islands are part of Mardudhunera Country.

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

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

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

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

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

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

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

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

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

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

The area of WC1995/002, as defined in the map forming Attachment 1 to the Native Title Application,<sup>8</sup> does not include any areas of Sea Country.

WC1996/082 does not include a publicly available map on the National Native Title Tribunal website. The Native Title Application<sup>9</sup> does describe the area covered by the claim, including "This country extends from the Tubridji Point on the coast south west of Onslow and tracking south to Yanarrie River." and "The area also includes the waters and associated islands between Tubridji point and Cane River. These islands were visited by Thalanyji People." The extent of this Sea Country from the coast is unclear, but would presumably include islands as distant as Airlie Island, approximately 30 km from the shore.

The area of WC1999/045, as defined in the map forming Attachment C to the Native Title Application,<sup>10</sup> includes an area of water extending approximately 30 km from the mainland coast in encompassing a number of islands, including:

- Airlie Island
- Ashburon Island
- Bessieres Island
- Direction Island
- Flat Island
- Locker Island
- Round Island
- Serrurier Island
- Table Island
- Thevenard Island
- Tortoise Island, and
- the Twin Islands

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

The area of WC2010/004, as defined in the map forming Attachment C to the Native Title Application<sup>11</sup> includes localised areas of sea up to approximately 5 km beyond the coast.

Woodside has developed a robust understanding of Thalanyji Sea Country cultural values and heritage features through publicly available information (Section 4.9.1.5.1) and consultation with BTAC under Regulation 11A. Woodside considers that it has taken all reasonable and practicable steps to identify cultural features and heritage values of Thalanyji people in the EMBA.

If further guidance from BTAC is received as part of ongoing consultation which changes Woodside's understanding of the extent of Thalanyji Sea Country, Woodside's Management of Change and Management of Knowledge process with EPO 28 will be applied to manage potential impact to newly identified cultural values or features to ALARP and Acceptable levels. This estimation does not limit

<sup>8</sup> [http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1995\\_002/Attachment%20A-%20Thalanyji%20Map.pdf](http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1995_002/Attachment%20A-%20Thalanyji%20Map.pdf)

<sup>9</sup> [http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1996\\_082/SNTAExtract\\_WC1996\\_082.pdf](http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1996_082/SNTAExtract_WC1996_082.pdf)

<sup>10</sup> [http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1999\\_045/1999\\_11\\_09%20Attachment%20B%20Map%20of%20Claim%20Area.pdf](http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1999_045/1999_11_09%20Attachment%20B%20Map%20of%20Claim%20Area.pdf)

<sup>11</sup> [http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC2010\\_004/WC2010\\_004%202.%20Map%20of%20Application%20Area.pdf](http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC2010_004/WC2010_004%202.%20Map%20of%20Application%20Area.pdf)

the extent of consultation with BTAC or the features and values they are encouraged to identify and communicate.

#### **4.9.1.6 Summary of cultural features and heritage values**

Woodside has developed a robust understanding of cultural features and heritage values relevant to the activity through examination of publicly available information, studies and consultation with relevant persons under regulation 11A.

Table 4-18 consolidates the cultural features and heritage values identified in Section 4.9.1.6 and confirms whether there is any potential for these to exist within the Operational Area or EMBA. As previously described topics which have been raised in the context of an interest linked to the natural environment are impact and risk assessed in Section 6.7 and 6.8.

As cultural features are physical elements of a place, these can generally be assessed for impacts; where a feature is avoided, it is not impacted. Heritage values relate less to what is significant and more to why something is significant; interaction between heritage values and the Operational Area can only be reliably informed by consultation with Traditional Custodians where they are willing to share the necessary knowledge. Assessment of heritage values beyond cultural features alone is addressed in Section 6.10 subject to these caveats.

**Table 4-27: Summary of cultural features and heritage values**

Identified cultural features and heritage values	Context	EP Source				Potential for overlap	
		Consultation Feedback	Indigenous Archaeological Heritage Assessment	Ethnographic Heritage Assessment	Desktop Literature Assessment	Operational Area	EMBA
<b>Archaeological Heritage and Landscapes</b>							
Coastal/ island archaeological sites	Coastal archaeological sites include shell middens, artefact scatters, skeletal material/burial sites, camps, meeting places, hunting places and water sources.	✓	✗	✓	✓	No	Possible (shoreline accumulation only)
Petroglyphs	Petroglyphs are a form of rock art. Petroglyphs are a prominent feature particularly at Murujuga where it is found on hard, volcanic rock.	✓	✗	✓	✓	No	Possible (submerged)
Fish traps	Stone arrangements constructed in intertidal areas which fill with fish at high tide and trap them at low tide/	✓	✓	✗	✓	No	Possible (submerged)
Submerged archaeological sites	The Ancient Landscape extends between 125m and 130m below current sea level. Ancient occupation of this area may have left traces through now submerged archaeological sites.	✓	✗	✗	✓	Possible albeit unlikely (borrow ground only)	Possible
Rivers, waterholes, tidal channels and seeps	Water sources on the Ancient Landscape which may be culturally significant or archeologically prospective.  Traditional knowledge retains knowledge of some water sources on the Ancient landscape and some submerged waterholes are related to a Kangaroo songline.	✗	✓	✗	✓	No	Known to occur

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Identified cultural features and heritage values	Context	EP Source				Potential for overlap	
		Consultation Feedback	Indigenous Archaeological Heritage Assessment	Ethnographic Heritage Assessment	Desktop Literature Assessment	Operational Area	EMBA
Submerged calcarenite ridges/ paleo beach barrier systems	Calcarenite ridges that have formed at former coastal sand dunes have the potential to encase and preserve artefacts from disturbance during inundation where these formed following human occupation.	x	✓	x	✓	Known to occur	Known to occur
Submerged hills	Hills on the Ancient Landscape which may be culturally significant or archeologically prospective. As sea level rose these hills would have become islands and eventually submerged.	x	✓	x	✓	No	Known to occur
Madeleine Shoals	Archaeologically prospective location on the submerged landscape, including igneous geology which has the potential to include rock art.	x	x	x	✓	No	Known to occur
Karst depressions/ Ravines and valleys between submerged ridges	Natural depressions with the potential to contain artefacts displaced during inundation.	x	✓	x	✓	No	Possible
<b>Intangible values</b>							
Songlines	Ethnographic survey noted dreaming tracks from locations onshore and to islands outside of the EMBA, but was not able to determine the routes of any dreaming tracks that may extend across the submerged landscape.	✓	x	✓	✓	Possible (unspecified)	Possible (unspecified)

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Identified cultural features and heritage values	Context	EP Source				Potential for overlap	
		Consultation Feedback	Indigenous Archaeological Heritage Assessment	Ethnographic Heritage Assessment	Desktop Literature Assessment	Operational Area	EMBA
Creation/ dreaming sites, sacred sites and ancestral beings	Ethnographic survey noted some sites associated with creation/dreaming or ancestral beings are known on land outside the EMBA. Publicly available literature talks to creation/dreaming and ancestral beings, including water serpents, connected to or originating from the sea generally.	✓	✗	✓	✓	Possible (unspecified)	Possible (unspecified)
Ceremonial sites	Places where ceremony (e.g. thalu ceremonies) are performed. All identified ceremonial sites are located onshore.	✗	✗	✗	✓	No	Possible (unspecified)
Cultural obligations to care for Country	Cultural obligation to care for the environmental values of Sea Country. Exclusion of Traditional Custodians from Sea Country or decision making processes may inhibit ability to care for Country.	✓	✗	✗	✓	Possible (unspecified)	Possible (unspecified)
Knowledge of Country/ customary law and transfer of knowledge	The preservation and transmission of knowledge is dependent on the preservation of the environment generally. Exclusion of Traditional Custodians from Sea Country may inhibit the transfer of knowledge.	✓	✗	✓	✓	Possible (unspecified)	Possible (unspecified)
Connection to Country	Connection to Country is described in publicly available literature as “important to the Traditional owners’ spirituality and religion”. Connection to Country may be damaged where people are displaced or disrupted (e.g. during colonisation) or where there is a loss of technical skills or environmental knowledge	✓	✗	✗	✓	Possible (unspecified)	Possible (unspecified)

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Identified cultural features and heritage values	Context	EP Source				Potential for overlap	
		Consultation Feedback	Indigenous Archaeological Heritage Assessment	Ethnographic Heritage Assessment	Desktop Literature Assessment	Operational Area	EMBA
Access to Country	Limitations on Traditional Custodians accessing or enjoying areas of Sea Country	✓	✗	✗	✓	Possible (unspecified)	No (No limitations on access beyond the Operational Area)
Kinship systems and totemic species	Traditional Custodians have connection to species through kinship and totemic systems. An individual may have obligation to care for or not consume a species to which they are kin.	✓	✗	✗	✓	Possible	Possible
Resource collection	Fishing, hunting, gathering of marine species including marine mammals, marine reptiles, fish and invertebrates.	✓	✗	✗	✓	Possible (unspecified)	Possible
<b>Marine ecosystems and species</b>							
Water quality	Interest only, raised as a natural environment interest	✓	✗	✗	X	Yes	Yes
Marine species	Generally raised in consultation and literature	✓	✗	✗	✓	Possible	Possible
Marine mammals: Whales	Generally raised in consultation Thalu species of totemic importance Linked to songlines and dreaming stories Humpback whales in particular	✓	✗	✗	✗	Possible	Possible
Marine mammals: Dolphins	Cultural ceremonies associated with communicating with dolphins Culturally important species	✓	✗	✗	✓	Possible	Possible
Marine mammals: Dugongs	Culturally important species Used as a resource	✓	✗	✗	✓	Possible	Possible

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Identified cultural features and heritage values	Context	EP Source				Potential for overlap	
		Consultation Feedback	Indigenous Archaeological Heritage Assessment	Ethnographic Heritage Assessment	Desktop Literature Assessment	Operational Area	EMBA
Marine reptiles: Marine turtles	Culturally important species and migration There are Thalu ceremonies associated with turtles Turtles and turtle eggs as a resource Law run through the sea, including turtles	✓	x	x	✓	Possible	Possible
Marine reptiles: Sea snakes	Culturally important species	✓	x	x	x	Possible	Possible
Fish: Fish, sharks and rays	Culturally important species Used as a resource Law run through the sea, including fish There are Thalu ceremonies associated with increasing fish stocks Fish, including bream and sting rays are totemic species Fish, including sharks and rays raised as a natural environment interest	✓	x	x	✓	Possible	Possible
Cephalopods: Squid and Octopus	Thalu species of totemic importance Resource	✓	x	x	✓	Possible	Possible
Seabirds	Culturally important species Birds (including shags, seagulls and osprey) and bird eggs as a resource	✓	x	x	✓	Possible	Possible
Plankton	Interest only, raised as a natural environment interest	✓	x	x	x	Possible	Possible
Benthic habitats: Coral	Culturally important with regard to connection with fish. Coral spawning specifically raised.	✓	x	x	x	No	Possible
Benthic habitats: Seagrass	Culturally important species Protection of animals.	✓	x	x	x	No	Possible

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Identified cultural features and heritage values	Context	EP Source				Potential for overlap	
		Consultation Feedback	Indigenous Archaeological Heritage Assessment	Ethnographic Heritage Assessment	Desktop Literature Assessment	Operational Area	EMBA
Benthic habitats: Macroalgal communities	Interest only, raised as a natural environment interest.	✓	x	x	x	No	Possible
Benthic habitats: Epifauna and infauna	Interest only, subtidal soft bottom communities raised as a natural environment interest.	✓	x	x	x	Yes	Yes
Shoreline habitats: Mangroves	Mangrove seeds as resource Critical breeding ground for marine and terrestrial wildlife. Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries	✓	x	x	✓	No	Possible
Shoreline habitats: Intertidal sand/ mudflat communities	Interest only, raised as a natural environment interest.	✓	x	x	✓	No	Possible
Shoreline habitats: Rocky shores	Interest only, raised as a natural environment interest.	✓	x	x	x	No	Possible
Shorelines	Interest only, raised as a natural environment interest.	✓	x	x	✓	No	Possible
Marine Park/ costal reserves	Interest only	✓	x	x	x	Yes	Yes

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#### 4.9.1.6.1 Further context: Archaeological heritage

Assessment of the Operational Area has not identified archaeological sites. Consultation with Traditional Custodians has not identified any Aboriginal cultural features or heritage values specifically associated with the trunkline route and Offshore Borrow Ground in Commonwealth Waters. The assessment of the Offshore Borrow Ground concluded that there is a low risk of potential impact on UCH arising from the activity. However, the assessment noted that full coverage of Offshore Borrow Ground is not currently available. As such, an additional survey is considered in Section 6.10 to address this.

No coastal areas or islands exist within the Operational Area. Islands do exist within the EMBA boundary, however given the EMBA is driven by an unplanned marine diesel spill there is no anticipated impact pathway from this activity to onshore archaeological sites above highest astronomical tide (HAT). No archaeological sites have been identified beyond terrestrial or intertidal areas, with the exception of two sites at Murujuga in Cape Bruguieres channel and Flying Foam Passage (Benjamin et al. 2020; Benjamin et al 2023), which are outside of the EMBA. However, it is recognised that there is the potential for submerged archaeological sites on the Ancient Landscape which is overlapped by the EMBA.

Archaeological sites identified onshore with the potential to exist in intertidal or submerged locations include petroglyphs, fish traps and artefact scatters or burials contained within sand dunes. As archaeological sites, these features have archaeological value which relates to the preservation of their fabric (i.e. the tangible features) and their context (i.e. their location and relationship to other archaeological and natural features). Archaeological sites may also have intangible dimensions (ICOMOS 2013) cultural value that exist in addition to their archaeological or scientific value and are assessed separately.

Certain landscapes have been identified as archaeologically prospective on the submerged Ancient Landscape, including:

- submerged water sources (rivers, waterholes, tidal channels and seeps) which have an increased likelihood of use or habitation as past generations used the associated resources (UWA 2021).
- submerged calcarenite ridges younger than human occupation of the continent which may have formed over and protected artefacts in situ (Veth 2019),
- prominent landscape features (e.g. hills, particularly of igneous rock formations) that may have been foci for cultural activity (UWA 2021),
- Karst depressions and other “catch points” where artefacts may accumulate following disturbances caused by inundation (UWA 2021, Nutley 2022, Nutley 2023a).

Madeleine Shoals has been specifically identified by MAC as a prospective due to its igneous rock formations which have the potential to contain petroglyphs.

#### 4.9.1.6.2 Further context: Intangible cultural heritage

Intangible cultural heritage has been identified through consultation with First Nations people as culturally important (refer to Section 4.9.1.5.3). Cultural knowledge, as expressed through songlines, dreaming, dance and other cultural practices, can be associated with tangible objects and physical sites that are culturally important to First Nations people (Ardler 2021; Bursill et al. 2007). Intangible cultural heritage can also be embodied in the practices, representations, expressions, knowledge, uses and skills associated with physical sites (UNESCO 2003). As a result, physical features may have intangible dimensions (ICOMOS 2013).

In terms of identified cultural features and heritage values related to intangible values summarised in Table 4-27, see below some additional context:

- **Songlines:** Oral Songlines are often described by First Nations people as the law of the land and make up part of the Dreaming (Neale and Kelly 2020:30). Songlines are viewed in Western academia as a framework for relating people to land and consist of a series of invisible, interconnected routes across the landscape that mark significant sites for First Nations people (Higgins 2021:723). Songlines demonstrate First Nations peoples' strong connections to land by revealing sacred knowledge that is place-specific (Roberts 2023:5). The land's physical features are instrumental in maintaining songlines because this is how ancestral spirits journeyed through, and interacted with, the physical landscape leaving sacred knowledge behind. The interconnection between the physical and spiritual is where songlines become intrinsically tied to significant places across Country. As a result, geographical landforms are recorded within songlines and become sacred places. Such landforms can include inter alia: rocks, mountains, rivers, caves and hills (Higgins 2021:724). Songlines can become lost, fragmented or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020:30). Physical sites that have been identified as comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge.

In Australia, songlines can stretch thousands of kilometres, making up a complex and organic network of stories containing cultural knowledge of First Nations communities across the land (Neale and Kelly 2020:35). Songlines can also extend out to Sea Country and contain cultural knowledge that is tied to geographic features, atmospheric phenomena and marine plants and animals. Often songlines containing references to a seascape or Sea Country make mention of mythical events occurring around marine life, fishing areas, submerged rocks or coral. Songlines that embody seascapes can reflect how a group may relate to, or value, Sea Country—for example connections to nearby islands that they once inhabited in their songlines (Smyth and Isherwood 2016:307). Songlines can also be used as proof of long-standing connection to land and support a legal entitlement to land rights (Higgins 2021:74). Examples where songlines contain strong references to Sea Country are more common in Pacific Islander and Torres Strait Islander communities, who often refer to seascapes and skylines in their songlines in order to communicate sacred knowledge that assists in safe navigation of the ocean (Neale and Kelly 2020:83-84). The routes of any songlines in the EMBA have not been provided by Traditional Custodians through consultation.

- **Creation/dreaming sites, sacred sites and ancestral beings:** The only sources located by Woodside with detailed descriptions of the location ancestral beings or creation/ dreaming/ sacred sites placed these on land or within inland water sources such as rivers or pools. However, some ancestral beings are noted to live within or originate from the sea generally, and some creation stories talk to the creation of features from or in the sea. Additionally, every place on shore or at sea must be assumed to have been created on some level in First Nations cosmology.
- **Cultural obligations to care for Country:** Caring for Country collectively refers to the cultural obligations of individuals and groups, as well as rituals and ceremonies required for the physical and spiritual health of the environment. In the literature reviewed by Woodside, caring for Country was noted to include, but is not limited to, maintenance of the physical environment and ecosystem. It may also have cultural, spiritual and ritual dimensions such as caring for ancestral beings or ensuring cultural safety. Thalu are places where increase ceremonies are performed to enhance or maintain populations of plants, animals or phenomena. All mentions of active ceremonial sites were confined to onshore locations, though the values may extend offshore where e.g., a thalu relates to marine species populations.
- **Knowledge of Country/customary law and transfer of knowledge:** Knowledge of and familiarity with the features of Sea Country is itself a value. The inherent potential for restricted or secret knowledge makes this difficult to assess even through consultation with Traditional Custodians. However, aspects such as limitations on access to sites or disruption/relocation of First Nations communities may have implications for the preservation of First Nations knowledge. Further,

connection to Country may be damaged where people are displaced or disrupted (e.g., during colonisation) or where there is a loss of technical skills or environmental knowledge (McDonald and Phillips, 2021). Transfer of knowledge includes continuing traditional practices to pass on practical skills. This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

- **Connection to Country:** Describes the multi-faceted relationship between First nations people and the landscape, which is envisioned as having personhood and spirit. It is also an aspect of personal identity for many First nations people. In the case of Sea Country this can mean identifying as a Saltwater person, where “essence of being a 'Saltwater' person is ontological... it is about how people relate spiritually to the sea and engage with spiritual forces that created it, the marine flora and fauna and people” (McDonald and Phillips, 2021).
- **Access to Country, including Sea Country:** Is necessary for the continuation of other values including caring for Country and the transfer of traditional knowledge. Being on Country can be an important way of expressing or maintaining connection to Country (Australian Indigenous HealthInfoNet n.d.). Access is also a value in its own right, as a continuation of traditional Sea Country access and use.
- **Kinship systems and totemic species:** Individuals may have kinship to specific species (Smyth 2008, Juluwarlu 2004) and/or a responsibility to care for species (Muller 2008). Kinship arises from totemic associations within First Nations “skin group” systems. It is forbidden for an individual to kill or eat a species who is from the same “skin group” (Juluwarlu 2004). They may also have certain obligations linked to the discussion of caring for Country below. It is assumed that marine species may have kinship/totemic relationships to Traditional Custodians, but it is understood that these relationships do not prohibit people outside of that “skin group” from hunting or eating that same species (Juluwarlu 2004).
- **Resource collection:** A number of marine species are identified through consultation and literature as important resources, particularly as food sources. In addition to their immediate value as sustenance, the gathering and preparation of these resources is informed by cultural knowledge, and an inability to use these resources may result in a loss of ability to transfer that knowledge to future generations.

#### 4.9.1.6.3 Further context: Marine ecosystems and species

First Nations people have raised through consultation that they have a general interest in environmental management and ecosystem health (i.e., natural environment interest), where a group/individual was seeking further information about potential impacts and risks from the Petroleum Activities Program on marine species and benthic communities in the Operational Area and EMBA. This includes marine mammals, marine reptiles, fish, seabirds, plankton, benthic and shoreline habitats and marine parks, which are described in context of their distribution and populations in Section 4.5 and 4.6, with further details in Appendix I (Master Existing Environment).

In terms of identified cultural features and heritage values related to marine ecosystems and species summarised in Table 4-27, see below some additional context:

- **Marine mammals:** Whales, and in particular humpback whales, have been identified through consultation with First Nations people as culturally important species, with totemic importance including their populations, biodiversity, and migration patterns. Cultural ceremonies associated with communicating with dolphins have also been raised by MAC through consultation and dugongs predominantly as a resource. Details pertaining to whales, dugongs and dolphins, their distribution, migration patterns and populations are described in Section 4.6.3, with further details in Appendix I (Master Existing Environment).
- **Marine reptiles:** Turtles and sea snakes have been identified through consultation with First Nations people as culturally important species, with turtles identified as a resource. First Nations people that identify marine reptiles as species of totemic importance or integral to songlines may



place high cultural value on their protection. No marine reptiles-related songlines have been identified as per Section 4.9.1.6.2 that have the potential to interact with the PAA or EMBA. Note the only songline related to marine reptiles (turtles) was shared by MAC, and was geographically restricted from Fortescue to Withnell Bay, in Mermaid Sound (MAC 2021). Cultural knowledge of turtles at a population level (turtle migration, behaviour and the related marine environment) may all be important in ensuring the continuation of cultural functions and activities that remain valuable to First Nations people (Fijn 2021:47; Delisle et al.2018). Details pertaining to marine reptiles, their distribution, and populations are described in Section 4.6.2, with further details in Appendix I (Master Existing Environment).

- **Fish and Cephalopods:** Fish and squid have been identified through consultation with First Nations people as a culturally important species, with fish generally being identified as a resource. First Nations may identify cultural values associated with fish species as important to maintaining both tangible (physical cultural sites) and intangible (cultural knowledge) cultural heritage. Tangible cultural heritage associated with fish can include important cultural sites such as midden sites, fish traps and thalu sites. While the octopus is an important totem to Ngarla People and features in the creation story of Solitary Island. There are increase ceremonies / rituals for species of squid and octopus to enhance or maintain populations. Thalu are places where these increase ceremonies are performed. Details pertaining to fish and cephalopods are described in **Section 4.6.1**, with further details in Appendix I (Master Existing Environment).
- **Seabirds:** Seabirds, and in particular shags, have been identified through literature as a culturally significant species (Malgana Land and Sea Management et al. (2021), as well as a resource (seabird eggs; Smyth 2007). Details pertaining to seabirds and migratory shorebirds are described in Section 4.6.4, with further details in Appendix I (Master Existing Environment).
- **Benthic habitats:** Through consultation, First Nations groups identified benthic habitats as valuable for their ecological values, including corals attracting fish and seagrass providing shelters for fauna, as well as an important resource for dugongs. Additionally, coral is valued by MAC for its aesthetic values. Details pertaining to benthic habitats and communities, including their distribution, are described in Section 4.5.2, with further details in Appendix I (Master Existing Environment).
- **Shoreline habitats:** Through consultation, First Nations groups identified shoreline habitats as valuable for their ecological values, including mangroves for providing shelter to marine invertebrates, which are identified resources, and potential nursery for turtles. Literature also notes that mangroves are also valued for the flora and fauna they are associated with and support (Commonwealth of Australia 2002) and Smyth (2007) reports that mangrove seeds are used as a resource by Ngarda-Ngarli. Details pertaining to shoreline and coastal habitats, including their distribution, are described in Section 4.5.3, with further details in Appendix I (Master Existing Environment).

#### 4.9.1.7 Historic Sites of Significance

There are no known sites of historic heritage of significance within the Operational Area. Appendix H describes heritage sites within the EMBA.

#### 4.9.1.8 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 Operational Area, nor within 10 km of the Operational Area. The Montebello Marine Park contains two known shipwrecks protected under the Underwater Cultural Heritage Act 2018: the Trial (wrecked in 1622, the earliest known shipwreck in Australian waters) and Tanami (unknown date) (Director of National Parks, 2018).

A review of existing side scan sonar data for the Operational Area on the Ancient Landscape was undertaken by a maritime archaeologist (Nutley 2022), with a particular but not exclusive focus on submerged fish traps. Although the remote sensing data was not targeted specifically at underwater cultural heritage when originally collected, the review noted the data was sufficient to provide a platform for assessing features that may require further investigation (Nutley 2022).

This review identified numerous clusters of depressions which are “certainly naturally occurring features” and “none of them appear to be archaeological in nature” but requested further advice on what these represented to better understand the landscape and whether these were permanent features such as karsts. Woodside was able to confirm from existing data and previous investigation that these depressions in sandy sediments are a result of marine life and moving fluids.

Review of the Side Scan Sonar of the seabed along the trunkline route identified one feature that was initially considered a possible shipwreck but based on texture and sharpness of the image was ultimately assessed to be a natural feature. Review of this data did not identify any evidence of the recorded wrecks or other maritime heritage within the Development Envelope.

Archaeological assessment of the borrow ground was undertaken by a maritime archaeologist (Nutley 2023b) based on previous studies, available geophysical and geotechnical data, historical research and the nature of the proposed activities in the borrow ground. This assessment noted:

*From the above analysis, the assessed risk of impact to UCH arising from the proposed dredging within the borrow field is low. This risk rating has been determined through:*

*Geophysical and geotechnical information that indicates a relatively uniform deposit of sandy sediments across the borrow field and consisting of 1-2m depth of coarse sand above variably cemented calcarenite.*

*Currently available geophysical survey data does not identify any indicators for the presence of UCH, including pre-inundation landscapes, shipwrecks or other features with cultural associations.*

The assessment concluded that there is a low risk of potential impact on UCH arising from the proposed dredging activities within the Scarborough Trunkline borrow ground. However, the assessment noted that full coverage of multibeam echo sounder and sidescan sonar data is not currently available. Recommended mitigation measures were proposed to address this limitation and are assessed in Section 6.7.2.

#### 4.9.1.9 World, National and Commonwealth Heritage Listed Places

No listed world, national or Commonwealth heritage listed places overlap the Operational Area, however several occur within the EMBA (Table 4-20) including:

- Ningaloo Coast (WHA)
- Shark Bay (WHA)
- Ningaloo coast (natural) (NHP)

- Dampier Archipelago (Indigenous) (NHP)
- Shark Bay (natural) (NHP)
- Ningaloo Marine Area – Commonwealth waters (CHP)
- Learmonth Air Weapons Range Facility (CHP).

Table 10-1 of Appendix H and the Scarborough OPP outline the values and sensitivities of these places.

The Murujuga Cultural Landscape was also added to Australia's World Heritage Tentative List in 2020 and the World Heritage nomination dossier was submitted for consideration in 2023. The boundaries of the cultural landscape, Outstanding Universal Values are yet to be finalised.

### 4.9.2 Commercial Fisheries

A number of Commonwealth and State fishery management areas are located within the Operational Area and EMBA. The Annual Fishery Status Reports published by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) were used to identify if Commonwealth managed fisheries have fished within the Operational Area and EMBA in the last 5 years. FishCube data were also requested from the WA Department of Primary Industries and Regional Development (DPIRD) for the most recently available 5-year period of fishery catch and effort data (2018-2022) to analyse the potential for interaction with State managed fisheries within the Operational Area and EMBA (DPIRD, 2022). Data was reviewed from the last 5 years as a subset of past fishing effort. This was deemed an appropriate period to represent potential future fishing effort over the lifecycle of this EP (4 year). In addition, any impacts to fish are expected to be temporary in nature (See Section 6.7 and Section 6.8) and therefore not extending beyond the life of the EP. This information was used to determine relevant fisheries for consultation who may be impacted by the proposed petroleum activities. Table 4-28 provides an assessment of the potential interaction and Appendix H and the Scarborough OPP provide further detail on the fisheries that have been identified through desk-based assessment and consultation (Section 5). Figure 4-20, Figure 4-21, and Figure 4-22 shows fisheries identified as having a potential interaction with the Petroleum Activities Program.

**Table 4-28: Commonwealth and State commercial fisheries overlapping the Operational Area and EMBA**

Fishery	Potential for interaction		
	Operational Area	EMBA	Description
<b>Commonwealth Managed Fisheries</b>			
North West Slope Trawl Fishery	✓	✓	The North West Slope Trawl Fishery management area overlaps the Operational Area and the EMBA. Fishery Status Report 2022 indicates current fishing effort is concentrated from Barrow Island to Broome, and occurred within the Operational Area and the EMBA (ABARES, 2021). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the Operational Area and EMBA.
Western Deepwater Trawl Fishery	✓	✓	The Western Deepwater Trawl Fishery management area overlaps the Operational Area and the EMBA. Fishery Status Report 2022 indicates current fishing effort is concentrated between Shark Bay and Cape Range, and occurred within the EMBA (ABARES, 2021). Fishery Status Reports indicate most recent activity within the Operational Area occurred in the 2016 - 2017 season (ABARES, 2021). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Western Tuna and Billfish Fishery	x	✓	The Western Tuna and Billfish Fishery management area overlaps the Operational Area and the EMBA. The Western Tuna and Billfish Fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. Fishery Status Report 2022 indicates current fishing effort is concentrated between Carnarvon and Albany, and occurred within the EMBA (ABARES, 2021). Fishing Status Reports indicated no fishing efforts occurred in the Operational Area in the last 5 years. Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.

Fishery	Potential for interaction		
	Operational Area	EMBA	Description
Southern Bluefin Tuna Fishery	x	x	The Southern Bluefin Tuna Fishery management area overlaps the Operational Area 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.
Western Skipjack Tuna Fishery	x	x	The Western Skipjack Tuna Fishery management area overlaps the Operational Area and the EMBA. The Western Skipjack Tuna Fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. The Fishery is not currently active and no fishing has occurred since 2009 (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
<b>State Managed Fisheries</b>			
Pilbara Line Fishery	✓	✓	The Pilbara Line Fishery licensees are permitted to operate anywhere within Pilbara waters (Newman et al., 2021), overlapping the EMBA. The fishery is active in the EMBA, with eleven 60 NM Catch and Effort System (CAES) blocks reporting up to five licences across the 2017 – 2022 seasons (DPIRD, 2022). The Operational Area overlaps 60 NM CAES blocks 19130, 19140, 19150, 20130, 20140 and 20160. FishCube data for the Pilbara Line Fishery is not provided at the 10 NM scale, therefore it is uncertain if the effort reported in the 60 NM CAES blocks 20160 and 19150 overlaps with the Operational Area, however given the extent of the Operational Area, Woodside considers it a possibility that interactions with the fishery may occur.
Pilbara Fish Trawl (Interim) Managed Fishery	✓	✓	The Pilbara Fish Trawl (Interim) Managed Fishery management area overlaps the Operational Area and the EMBA. The fishery has remained consistently active in the EMBA over the last 5 years, with six 60 NM CAES blocks reporting up to four vessels across each season between 2017 – 2022 (DPIRD, 2022). The fishery is active across the Operational Area with one 10 NM CAES blocks reporting up to four vessels active between the 2017 – 2022 seasons (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the Operational Area and the EMBA.
Specimen Shell Managed Fishery	✓	✓	The Specimen Shell Managed Fishery management area overlaps the Operational Area and the EMBA. The fishery is active across the EMBA with ten 60 NM CAES blocks reporting up to six licences active between the 2017 – 2022 seasons (DPIRD, 2022). The fishery is active across the Operational Area with one 10 NM CAES blocks reporting less than three vessels active between the 2017 – 2019 seasons (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the Operational Area and the EMBA.

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Fishery	Potential for interaction		
	Operational Area	EMBA	Description
Marine Aquarium Fish Managed Fishery	✓	✓	The Marine Aquarium Fish Managed Fishery management area overlaps the Operational Area and EMBA. The fishery is active across the EMBA with eight 60 NM CAES blocks reporting up to six licences active between the 2017 – 2022 seasons (DPIRD, 2022). The fishery is active across the Operational Area with two 10 NM CAES blocks reporting up to four vessels active between the 2017 – 2022 seasons (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the Operational Area and the EMBA.
Pilbara Crab Managed Fishery	✓	✓	The Pilbara Crab Managed Fishery management area overlaps the Operational Area and the EMBA. The fishery has remained consistently active in the EMBA over the last 5 years with two 60 NM CAES blocks reporting less than three licences across 2017 – 2022 seasons (DPIRD, 2022). FishCube data for the Pilbara Crab Fishery is not provided at the 10 NM scale, therefore it is uncertain if the effort reported in the 60 NM CAES blocks overlaps with the Operational Area. However, given the extent of the Operational Area, Woodside considers it a possibility that interactions with the fishery may occur.
Pilbara Trap Managed Fishery	✓	✓	The Pilbara Trap Managed Fishery management area overlaps the Operational Area and the EMBA. The fishery is active across the EMBA with thirteen 60 NM CAES blocks reporting up to three vessels active between the 2017 – 2022 seasons (DPIRD, 2022). FishCube data for the Pilbara Trap Fishery is not provided at the 10 NM scale, therefore it is uncertain if the effort reported in the 60 NM CAES blocks overlaps with the Operational Area. However given the extent of the Operational Area, Woodside considers it a possibility that interactions with the fishery may occur.
Mackerel Managed Fishery (Area 2 and Area 3)	✓	✓	The Mackerel Managed Fishery management area overlaps the Operational Area and the EMBA. The fishery is active across the EMBA with fifteen 60 NM CAES blocks reporting up to six vessels active between the 2017 – 2022 seasons (DPIRD, 2022). The fishery is active across the Operational Area with ten 10 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 within the Operational Area and the EMBA.
Western Australian Sea Cucumber Fishery	✓	✓	The Western Australian Sea Cucumber Fishery management area overlaps the Operational Area and the EMBA. The FishCube data reported three CAES blocks overlapping the EMBA (DPIRD, 2022). Fishing effort was reported by less than three vessels across the 2017 – 2022 seasons (DPIRD, 2022). The fishery is active across the Operational Area with one 10 NM CAES blocks reporting less than three vessels active between the 2018 – 2019 seasons (DPIRD, 2022). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the Operational Area and the EMBA.

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Fishery	Potential for interaction		
	Operational Area	EMBA	Description
Nickol Bay Prawn Managed Fishery	✓	✓	The Nickol Bay Prawn Managed Fishery management area overlaps the Operational Area and the EMBA. FishCube data reports fishing effort occurs within the EMBA across seven 60 NM CAES blocks, reporting up to 8 licences across the 2017 – 2022 seasons (DPIRD, 2022). FishCube data reported active fishing by less than three vessels in 2017 – 2018 season in the 10 NM CAES block 202164 that overlaps the Operational Area. Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the Operational Area and the EMBA.
West Coast Deep Sea Crustacean Managed Fishery	x	✓	The West Coast Deep Sea Crustacean Managed Fishery is permitted to fish in waters deeper than the 150 m isobath overlapping the Operational Area and EMBA. The fishery has remained consistently active in the EMBA between the 2017 – 2022 seasons with ten 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 Operational Area (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Onslow Prawn Managed Fishery	x	✓	The Onslow Prawn Managed Fishery management area overlaps the Operational Area and the EMBA. FishCube data reports fishing effort occurs within the EMBA across five 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 Operational Area (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Exmouth Gulf Prawn Managed Fishery	x	✓	The Exmouth Gulf Prawn Managed Fishery management area overlaps the EMBA. The fishery has remained consistently active in the EMBA between the 2017 – 2022 seasons with two 60NM CAES block overlapping the EMBA reporting up to six vessels with active fishing effort (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Shark Bay Scallop Managed Fishery	x	✓	The Shark Bay Scallop Managed Fishery management area overlaps the EMBA (DPIRD 2022). FishCube data reports fishing effort occurs within the EMBA across one CAES blocks reporting up to fourteen licenses across 2017 – 2018 season (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM CAES blocks overlapping the Operational Area (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Shark Bay Crab Managed Fishery	x	✓	The Shark Bay Crab Managed Fishery management area overlaps the EMBA (DPIRD 2022). FishCube data reports fishing effort occurs within the EMBA across one CAES blocks reporting up to twenty licenses across 2017 – 2022 seasons (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM CAES blocks overlapping the Operational Area (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Shark Bay Prawn Managed Fishery	x	✓	The Shark Bay Prawn Managed Fishery management area overlaps the EMBA (DPIRD 2022). FishCube data reports fishing effort occurs within the EMBA across one CAES blocks reporting up to eighteen licenses across 2017 – 2022 seasons (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM CAES blocks overlapping the Operational Area

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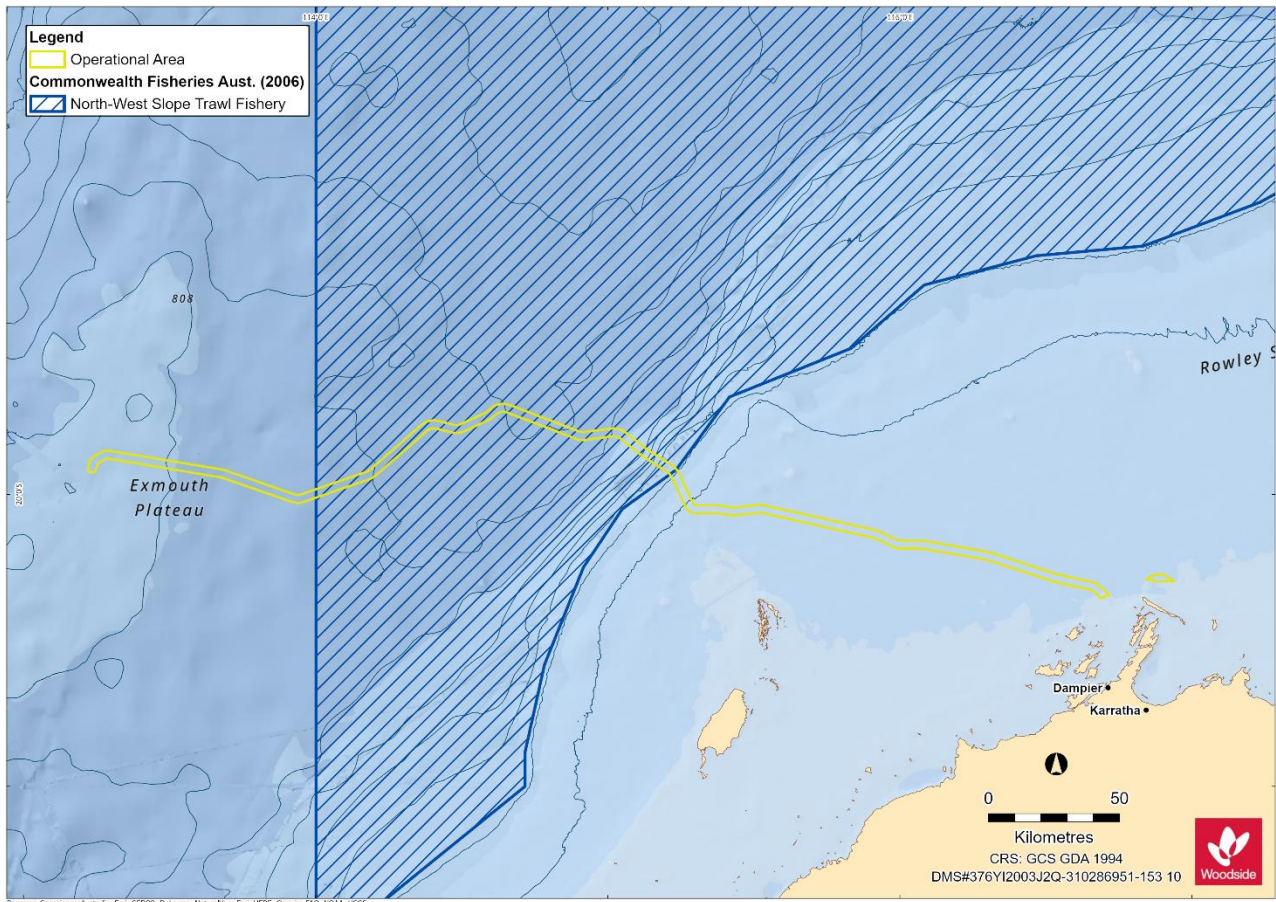
Fishery	Potential for interaction		
	Operational Area	EMBA	Description
			(DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions	x	✓	There is no publicly available information on the extent of the management area for the Open Access Fishery, however FishCube data reports fishing effort occurs within the EMBA across one CAES blocks reporting less than three licenses across 2017 – 2019 seasons (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM CAES blocks overlapping the Operational Area (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
West Coast Rock Lobster Fishery	x	✓	The Western Rock Lobster Fishery management area overlaps the EMBA (DPIRD 2022). FishCube data reports fishing effort occurs within the EMBA across two CAES blocks reporting up to three licenses across 2017 – 2020 seasons (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM CAES blocks overlapping the Operational Area (DPIRD, 2022). Woodside considers there to be potential for interaction with this fishery and the Petroleum Activities Program within the EMBA.
Gascoyne Demersal Scalefish Fishery	x	✓	The Gascoyne Demersal Scalefish Fishery management area overlaps the EMBA (DPIRD 2022). FishCube data reports fishing effort occurs within the EMBA across five CAES blocks reporting up to twelve licenses across 2017 – 2022 seasons (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM CAES blocks overlapping the Operational Area (DPIRD, 2022). Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
Abalone Managed Fishery	x	x	The Abalone Managed Fishery management area overlaps the Operational Area 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.
Land Hermit Crab Managed Fishery	x	x	The Land Hermit Crab Managed Fishery management area overlaps the EMBA where shoreline contact is predicted. FishCube reported no fishing effort within the EMBA where shoreline contact has been modelled. Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
West Coast Demersal Gillnet Managed Fishery	x	x	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.
South West Coast Salmon Managed Fishery	x	x	The South West Coast Salmon Fishery management area overlaps the Operational Area 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.

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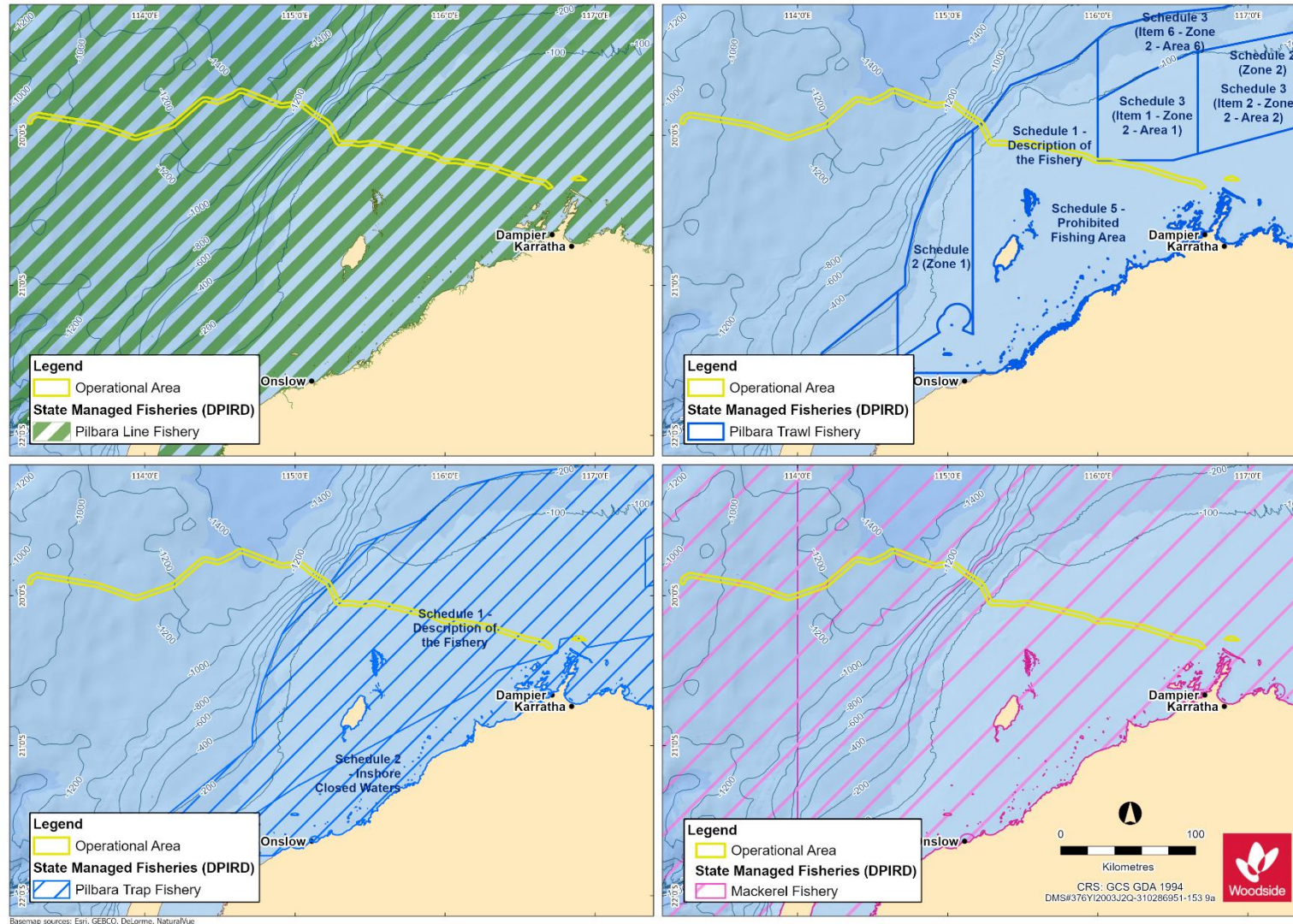
Fishery	Potential for interaction		
	Operational Area	EMBA	Description
Pearl Oyster Managed Fishery	x	x	The Pearl Oyster Managed Fishery management area overlaps the EMBA. However, FishCube data reported no fishing effort within the Operational Area or EMBA in the last five years (2017 – 2022) (DPIRD, 2022). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
<b>Charter based commercial operators</b>			
Tour Operators	✓	✓	<p>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 fourteen 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).</p> <p>FishCube data reports consistent fishing effort across seventeen 60 NM CAES blocks that overlap the Operational Area (DPIRD 2022). Fishing effort was reported by up to four vessels across the 2017 – 2022 seasons (DPIRD, 2022).</p> <p>FishCube data indicate tour operator fishing effort highest around Ningaloo and Muiron Islands, Shark Bay and at Barrow Island and the Montebello Islands. Accordingly, Woodside considers it a possibility that interactions with the fishery may occur within the Operational Area and the EMBA.</p>

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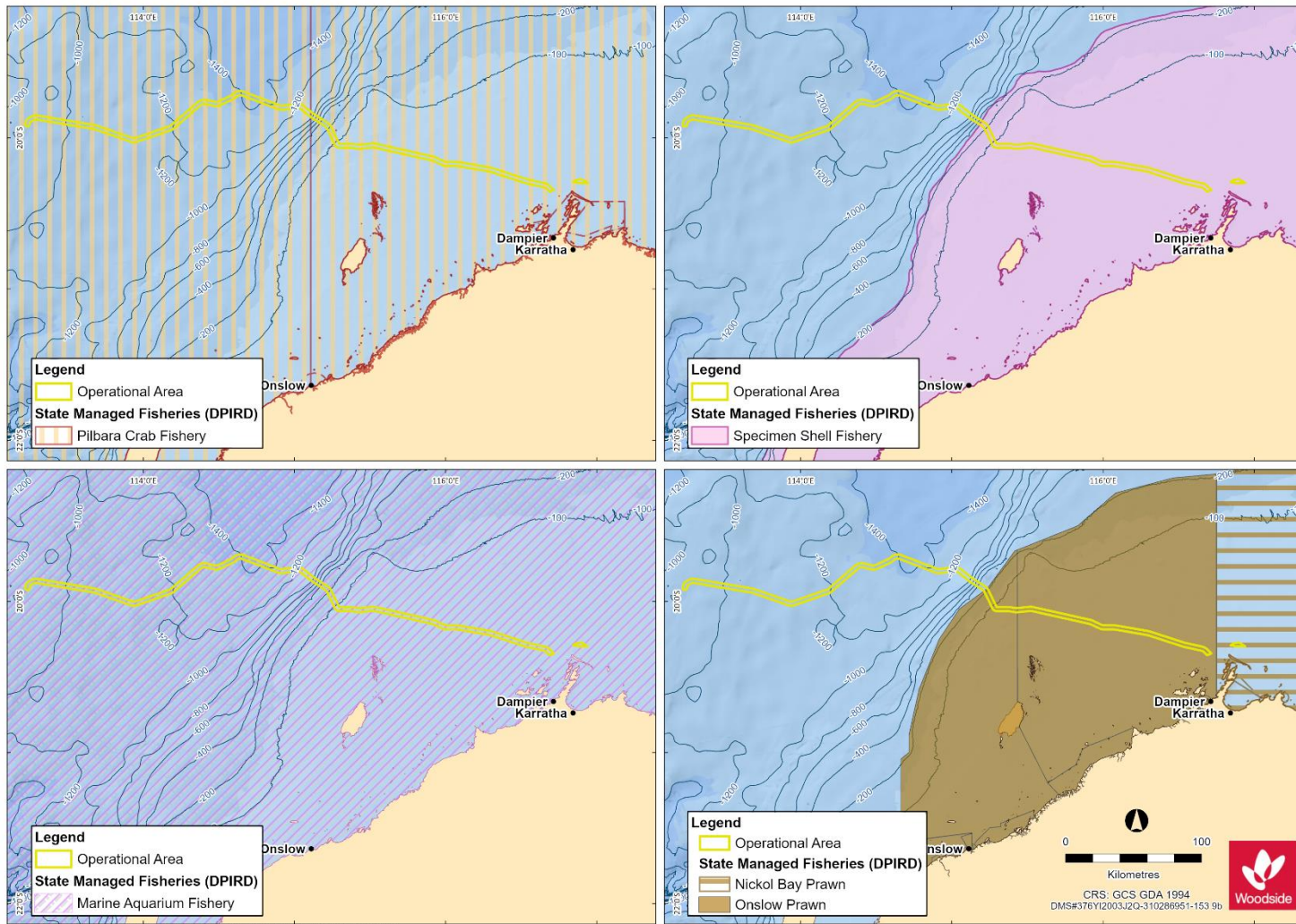
**Figure 4-20: Commonwealth-managed commercial fisheries overlapping the Operational Area with a potential for interaction with the Petroleum Activities Program**





**Figure 4-21: State-managed commercial fisheries overlapping the Operational Area with a potential for interaction with the Petroleum Activities Program**

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**Figure 4-22: State-managed commercial fisheries overlapping the Operational Area with a potential for interaction with the Petroleum Activities Program**

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### 4.9.3 Traditional Fisheries

Due to the depth of the majority of the Operational Area, there is unlikely to be any traditional fisheries, with exception of shallower depths in the Trunkline Project Area near the State waters boundary. The coastal waters of the Dampier Archipelago, as well as the Montebello Islands, Ningaloo Reef and Barrow Island within the EMBA have a known history of traditional fishing.

### 4.9.4 Tourism and Recreation

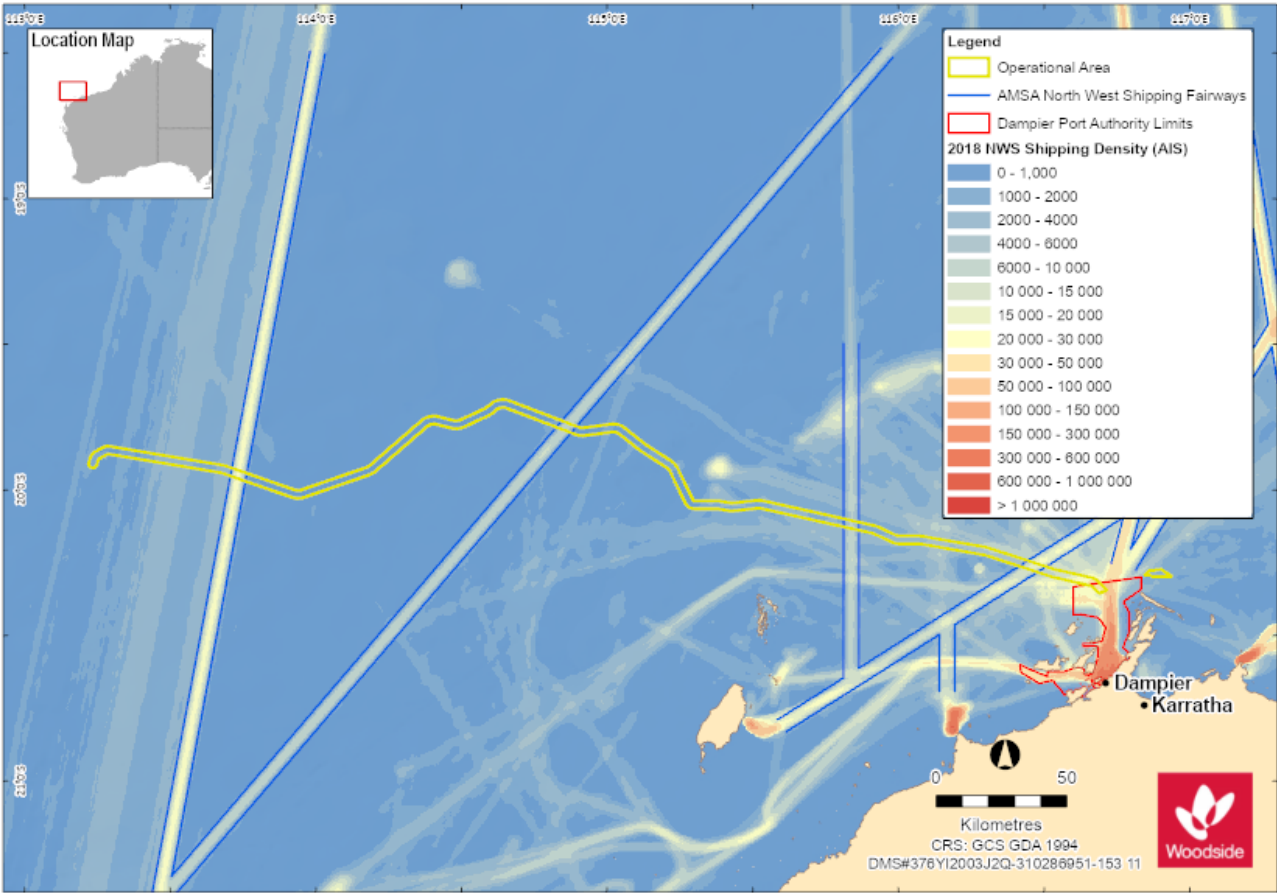
Tourism activities may occur in the Operational Area close to the Dampier Archipelago. However, the Operational Area is located far from most tourism activities in the NWMR. Recreational fishing may occur throughout the EMBA, primarily in continental shelf waters, around offshore islands and near shoreline areas. Dolphin and turtle watching tours may occur near the Dampier Archipelago within the EMBA. Cruise ships operate within the EMBA. Dive sites are located in a number of locations within the EMBA including Montebello Islands, and Rowley Shoals.

### 4.9.5 Commercial Shipping

The Australian Maritime Safety Authority (AMSA) has introduced a network of marine fairways across the NWMR off WA to reduce the risk of vessel collisions with offshore infrastructure. It is noted that a number of these fairways intersect with the Operational Area; the nearest shipping fairway is approximately 1 km to the north-west of the Operational Area (Figure 4-23).

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. The State waters adjacent to the easternmost point of the Trunkline Project Area falls within the boundaries of the Pilbara Ports Authority, within which the ports of Dampier and Port Hedland lie. Vessel tracking data suggest shipping is concentrated to the east of the Operational Area where increased vessel traffic will be associated with ports servicing the resource industry at Barrow Island, Onslow and Dampier (Section 11.8, Appendix H).

The Port of Dampier overlaps the EMBA (Figure 4-23) through the Dampier Archipelago and is a major industrial port in the north-west of WA. It is currently one of the world's largest bulk export port by tonnage and services the petrochemical, salt, iron ore and natural gas export industries. It is also the departure point for day cruises through the Dampier Archipelago.



**Figure 4-23: Vessel density map for the Operational Area and EMBA, derived from AMSA satellite tracking system data (vessels include cargo, LNG tanker, passenger vessels, support vessels, and others/unnamed vessels)**

#### 4.9.6 Oil and Gas

The Operations Area is located within the Exmouth Plateau area of the Northern Carnarvon Basin. There are a number of petroleum titles held by various title holders within the EMBA. The Trunkline Project Area intersects several existing oil and gas pipelines (Table 3-8) and several facilities are located within 50 km of the Operational Area (Table 4-29; Figure 4-24).

**Table 4-29: Other oil and gas facilities located within 50 km of the Operational Area**

Facility Name and Operator	Distance and direction from Operational Area to facility
Pluto Platform - Woodside	2 km north
Wheatstone Platform - Chevron	10 km north
Stag Platform - Jadestone	5 km south
Reindeer Platform - Santos	15 km north
Goodwyn Platform - Woodside	48 km north
Campbell Platform and Sinbad platform (Varanus hub) - Santos	50 km south

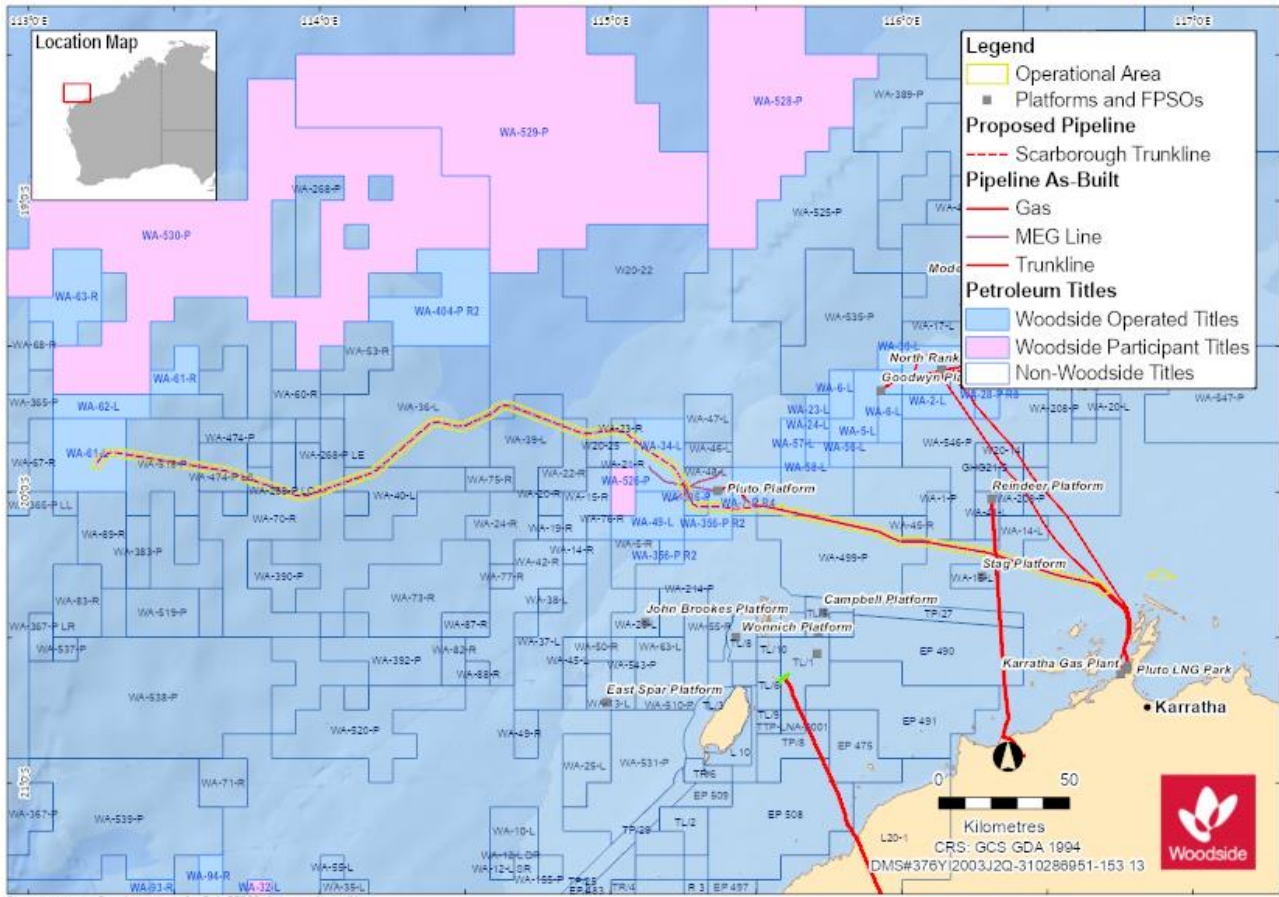


Figure 4-24: Oil and gas infrastructure and facilities within the Operational Area and EMBA

#### 4.9.7 Defence

The Trunkline Project Area (from KP 120) and EMBA overlap the Defence Training Area associated with the Learmonth RAAF base. Defence areas overlapping the Operational Area and EMBA are presented in Figure 4-25.

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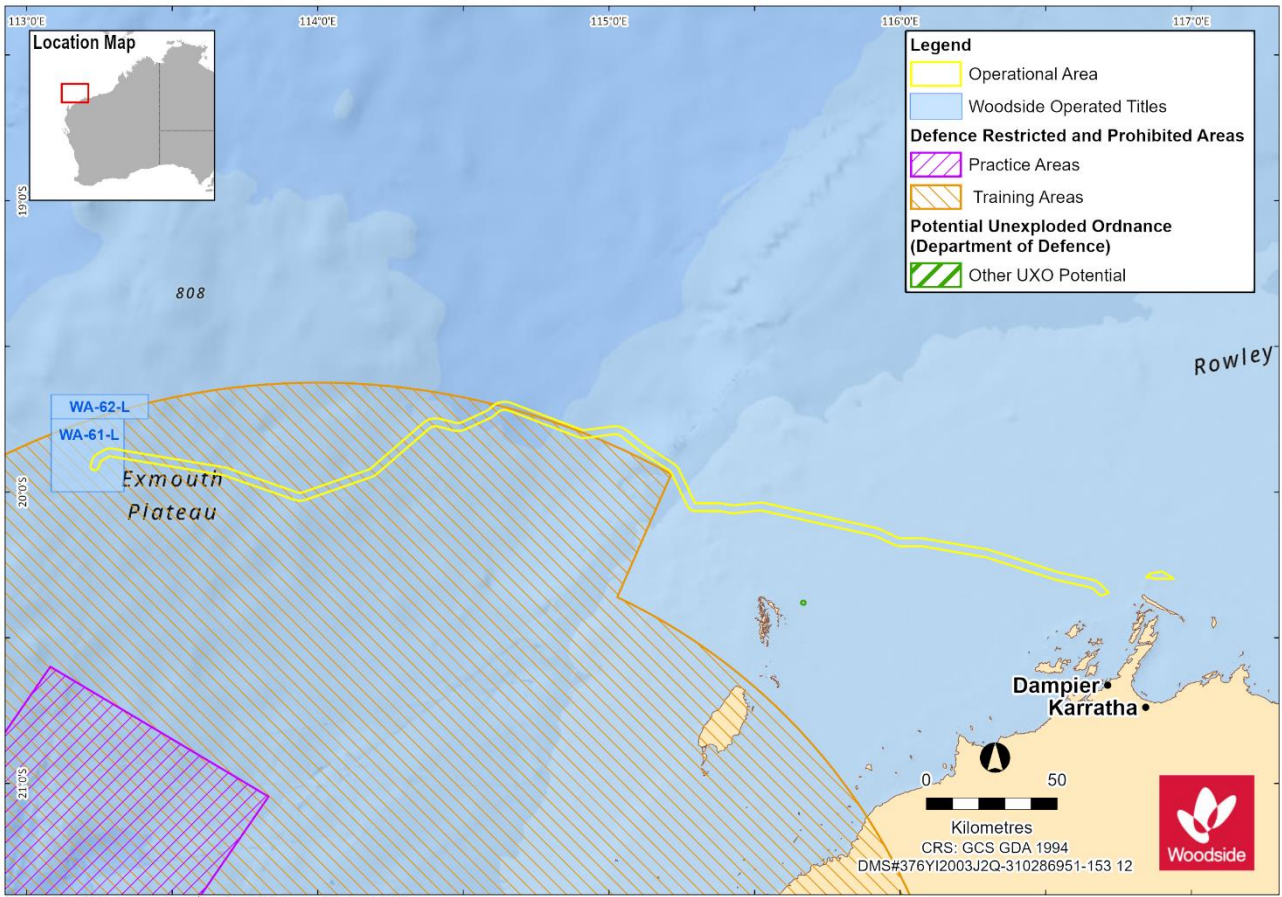


Figure 4-25: Defence areas within the Operational Area

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## 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 (Tipakalippa Appeal) (see Section 5.5.2 and 5.5.1) delivered on 2 December 2022.

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

Woodside's consultation methodology is divided into three parts:

- The first section (Section 5.2 to 5.7) 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 5.8) explains Woodside's application of the consultation methodology and Woodside's assessment of relevant persons for this EP.
- The third section (Section 5.9) details the:
  - Opportunities provided to persons or organisations to be aware of Woodside's proposed EP and participate in consultation, including individual Traditional Custodians.
  - Consultation information provided to relevant persons, feedback received and Woodside's assessment of the merits of objections or claims.

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 5.4.3).

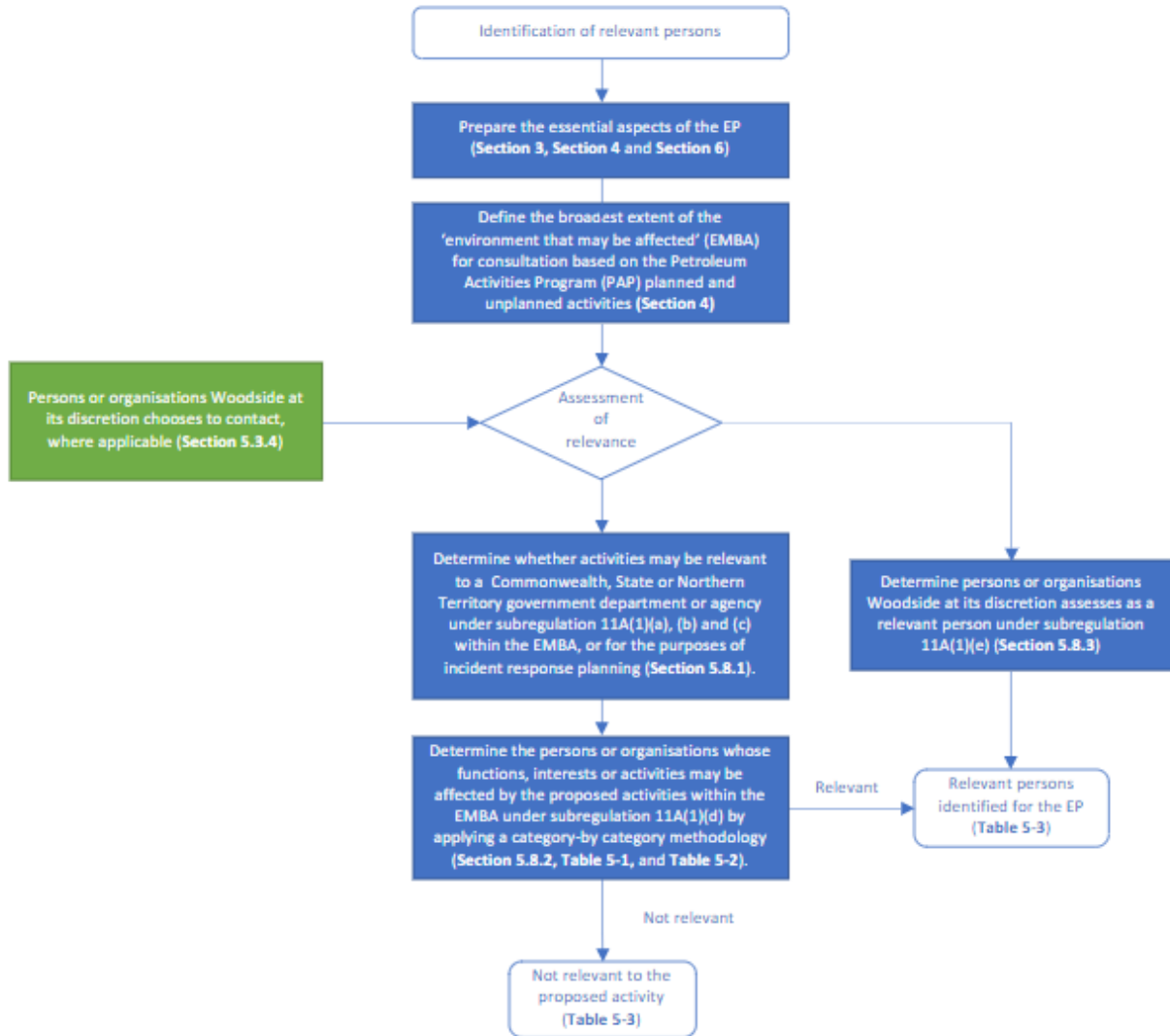


Figure 5-1: Overview of Woodside’s methodology to identify relevant persons

## 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 reviewed and updated periodically.

Woodside acknowledges NOPSEMA's Guideline on *Consultation in the course of preparing an environment plan* (12 May 2023) as well as recent judicial guidance in the Tipakalippa Appeal (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.
- The Tipakalippa Appeal has also been further considered in the context of specific methods for consultation with First Nations relevant persons (Section 5.5.1).

In order to undertake consultation, Woodside has developed a methodology for identifying relevant persons, in accordance with regulation 11A(1) of the Environment Regulations (Section 5.3). 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 Operational Area, being the area in which our planned activities are proposed to occur (see Section 3.5) 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:

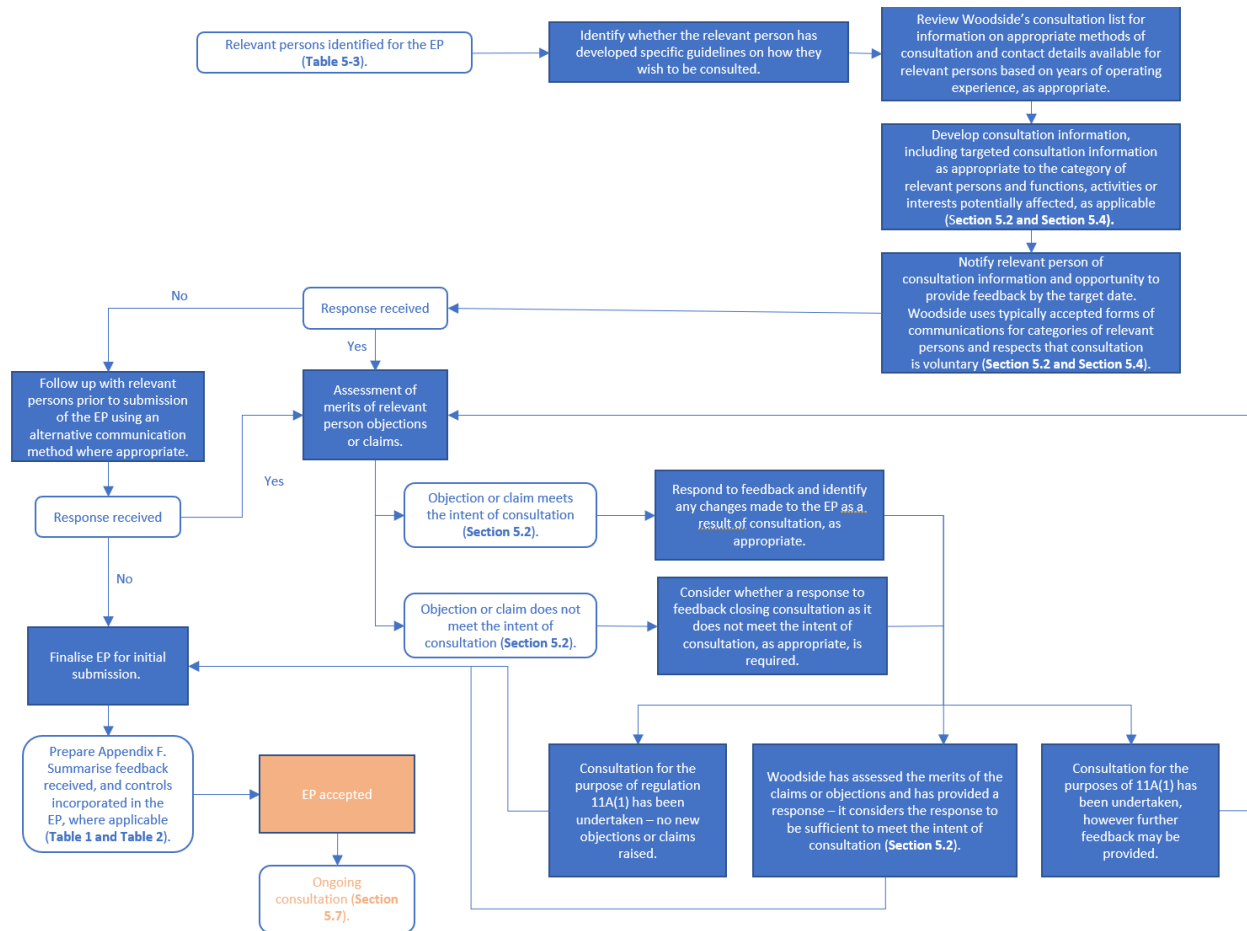
- consult with each of the following (a relevant person) in the course of preparing an environment plan:
  - each Department or agency of the Commonwealth to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant;
  - each Department 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 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 5.7 and Section 7.17.2.1)

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



**Figure 5-2: Overview of Woodside’s consultation approach**

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

Federal Court:

- [Santos NA Barossa Pty Ltd v Tipakalippa \[2022\] FCAFC 193](#)

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 2023](#)
- [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](#)

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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](#)
- [Interim Engaging with First Nations People and Communities on Assessments and Approvals under the Environment Protection and Biodiversity Act 1999](#)

### 5.3 Identification of Relevant Persons for Consultation

#### 5.3.1 Regulations 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. These government departments and agencies are listed in Table 5-3: Assessment of relevance below. 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 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 guidance on the definition of functions, interests and activities is as follows in accordance with NOPSEMA’s *GL2086 – Consultation in the course of preparing an environment plan* guideline (May 2023):

<b>Functions</b>	Refers to a power or duty to do something.
<b>Interests</b>	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.
<b>Activities</b>	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 and Section 5.2, Woodside's methodology for determining 'relevant persons' for the purpose of regulation 11A(1)(d) of the Environment Regulations includes consideration of:

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

### 5.3.3 Regulation 11A(1)(e)

In addition to assessing relevance under regulation 11A(1)(d), Woodside has discretion to categorise any other person or organisation as a relevant person under regulation 11A(1)(e).

### 5.3.4 Persons or Organisations Woodside Chooses to Contact

In addition to undertaking consultation with relevant persons under regulation 11A(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 that Woodside should consult, or engage with;
- 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. In this circumstance, 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 5.8). The result of Woodside's assessment of relevance during the development of the EP is outlined at Table 5-3.

Engagement undertaken with persons or organisations Woodside assessed as not relevant but chose to contact are summarised at Appendix F, Table 2.

## 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 Petroleum Activities Program. 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, reference 1.1 and 2.1). This is provided to relevant persons and organisations and is also available on Woodside's website for interested parties to access and to provide feedback on. The Consultation Information Sheet typically includes a description of the proposed petroleum activity, the Operational Area where the activity will take place, the timing and duration of the activity, a location map of the Operational Area 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 Operational Area, 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.

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 5.8 to determine relevance and evidenced in Appendix F, Table 1 as appropriate.

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

- Consultation Information Sheet available on Woodside's website;
- Summary Consultation Information Sheet, presentations or summaries specific to a particular relevant person group;
- subscription available on Woodside's website to receive notification of new Consultation Information Sheets for Woodside EPs;
- emails;
- letters;
- phone calls;
- face-to-face meetings (virtual or in person) with presentation slides or handouts as appropriate;
- Maps outlining a persons or organisations defined area of responsibility in relation to the proposed activity, for example a fisheries management area or defence training area; 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), the threshold for genuine two-way engagement is met via information on incorporation of controls, where applicable, being provided to the relevant person to ensure the relevant persons understand how their input has been considered in the development of the EP.



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

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

Category of relevant person	Typically accepted form of communication
Government departments / agencies – marine	Woodside applies NOPSEMA’s guideline for engagement with Commonwealth government departments or agencies in line with <u>GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023</u> by using email for its consultation unless another form of communication is requested.
Government departments / agencies – environment	
Government departments / agencies – industry	
Commercial fisheries and peak representative bodies	<p><b>Commonwealth commercial fisheries:</b> Email is used as the primary form of communication with Commonwealth commercial fisheries in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used where requested.</p> <p><b>State commercial fisheries and recreational marine users:</b> The Western Australian Department of Primary Industries and Regional Development (DPIRD) has responsibility for managing the <i>Fish Resources Management Act 1994</i> and <i>Aquatic Resources Management Act 2016</i>, 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 where requested.</p> <p><b>Peak representative bodies:</b> 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 where requested.</p>
Recreational marine users and peak representative bodies	
Titleholders and Operators	Email is used as the primary form of communication between titleholders and operators in the ordinary course of business. Other forms of communication, such as phone calls, and meetings and/or presentation briefings are used where requested.
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 where requested.
Traditional Custodians and nominated representative corporations	The forms of communication that Woodside engages in are often bespoke and applied on a case-by-case basis and as appropriate to, or as requested by the specific group, such as email, phone calls, meetings and community forums. Other forms of communication are used where requested.
Native Title Representative Bodies	The forms of communication that Woodside engages in are often bespoke and applied on a case-by-case basis and as appropriate to the specific group, such as email, phone calls, meetings and community forums. Other forms of communication are used where requested.
Historical heritage groups or organisations	NOPSEMA’s guideline ( <u>GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023</u> ) 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 where requested.
Local government and recognised local community	<b>Local government:</b> NOPSEMA’s guideline ( <u>GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – January 2023</u> )

<p><b>reference/liaison groups or organisations</b></p>	<p>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 <b>chambers of commerce</b>: 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 where requested.</p>
<p><b>Other non-government groups or organisations</b></p>	<p>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 where requested.</p>
<p><b>Research Institutes and Local conservation groups or organisations</b></p>	<p>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 where requested.</p>

Information which is provided to relevant persons for the purposes of consultation on this EP is summarised at Appendix F, Table 1.

Appendix F, Table 2 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 Reasonable Period for Consultation**

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

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

Woodside has allowed a reasonable period for relevant persons, including Traditional Custodian relevant persons, to participate in consultation for this Environment Plan. The consultation period for this Environment Plan spans almost 2 years, from initial commencement of Woodside’s consultation period in August 2021, to submission of this Environment Plan, in October 2023.

The consultation period under this Environment Plan greatly exceeds benchmark periods under other relevant legislative processes:

- Consultation under Regulation 11B of the Regulations sets out a public consultation period of 30 days.
- The Department of Mines and Petroleum “Guidelines for Consultation with Indigenous People by Mineral Explorers” directs a period of 21- 30 days of consultation with traditional owners.
- Guidance taken from the previous *Aboriginal Cultural Heritage Act 2021—Consultation Guidelines* (Government of Western Australia, 2023) suggests that up to 12 weeks may be a reasonable period of time to allow identification, contact, and response, from First Nations peoples (subject to any alternative timeframe being agreed through co-design of consultation).

This extended period of consultation demonstrates that Woodside has provided a “reasonable period” for consultation in accordance with regulation 11A(3). Commentary in the Tipakalippa Appeal judgment limits consultation to a process that must be capable of being discharged within a reasonable time:

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

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

Woodside's typical approach is as follows:

- advertising in a selected local, state and national newspapers to give persons or organisations the opportunity to understand the activity and identify whether their functions, interests or activities may be affected;
- providing consultation materials directly to identified relevant persons as well as persons who are not relevant but Woodside chose to contact (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.

Appendix F, Table 1 and Table 2 sets out a history of consultation and demonstrates that a reasonable period of consultation has been afforded for each relevant person.

Woodside considers that the “reasonable period” of consultation for this Environment Plan has been provided and the consultation under regulation 11A is complete.

As detailed in Section 5.7 and Section 7.15, if comments and feedback are received after the Environment Plan has been submitted, Woodside will consider those comments and update controls as appropriate, at all stages during the life of the Environment Plan, as per Woodside's ongoing consultation approach.

### 5.4.3 Discharge of Regulation 11A

The Full Federal Court made clear in the Tipakalippa Appeal that consultation should be approached in a “reasonable”, “pragmatic” and “not so literal” way, so that consultation obligations were capable of being met by titleholders (Section 5.5.1). Consultation is a “real world activity” and must be capable of reasonable discharge. The Full Federal Court referred to Native Title cases as an illustration that reasonable limits should be applied to consultation efforts to ensure the process is workable.

When the titleholder demonstrates that it has provided sufficient information and a reasonable period for consultation, the regulation 11A consultation requirements are met. Meeting these requirements is the evaluative judgment to determine reasonable satisfaction of the consultation obligation, and as such, the regulator uses its discretion to determine if these criteria are met. The nature of the person being consulted, and their function, interest and activity that may be affected, will inform the manner of consultation and the reasonable period to be afforded.

The titleholder is not required to obtain consent from a consultee to engage in the activity or confirmation from a consultee that consultation is complete. A titleholder is required to provide an opportunity to consult.

The Federal Court has commented that a “reasonable opportunity” for consultation must be afforded to relevant persons. A reasonable opportunity may not be every opportunity requested and is limited to reasonable opportunities to consult.

Woodside has completed all practicable and reasonable steps to discharge its consultation obligations. Woodside has provided sufficient information and a reasonable period of time to enable relevant persons to make an informed assessment of the possible impacts and risks of the activity on their functions, interests or activities, and sufficient time to provide relevant feedback for Woodside to assess relevant persons' claims and action the assessment and response. Woodside has also provided a reasonable opportunity for relevant persons to engage in genuine two-way dialogue on environmental impacts and concerns.

Woodside has discharged its duty under regulation 11A. Woodside considers that consultation under regulation 11A is complete.

Appendix F, Table 1 and Table 2 of this Environment Plan sets out the history of consultation under regulation 11A. To the extent a relevant person says that it has further information to share or claims that consultation under regulation 11A has not completed Appendix F, Table 1 and Table 2 provide reasons specifically why Woodside considers consultation under regulation 11A has been met in relation to that relevant person.

## 5.5 Context of Consultation Approach with First Nations

To comply with regulation 11A, Woodside identifies and consults Traditional Custodians whose functions, interests or activities may be affected by the activities under an Environment Plan.

### 5.5.1 Approach to Methodology – Woodside’s Interpretation of Tipakalippa

Woodside has implemented a consultation methodology consistent with regulation 11A and guidance provided in the Tipakalippa Appeal (Section 5.2). Woodside’s consultation methodology allows for a sufficiently broad capture of Traditional Custodian relevant persons, provides for informed consultation, follows cultural protocols and allows a reasonable opportunity for consultation with Traditional Custodians whose functions, interests and activities may be affected by the activity described in this Environment Plan (Section 5.5.2.1 to 5.5.2.3.)

Woodside notes the Full Federal Court discussed several Native Title Act 1993 (Cth) (NTA) cases in response to a submission made in that case that a requirement under regulation 11A to consult “each and every” relevant person would be “unworkable”. The reference to native title cases dealt with how decision-making processes under the NTA requiring “all” members of a group to be contacted for communal approval are interpreted by courts in a “reasonable”, “pragmatic” and “not so literal” way, and how obligations to consult “each and every” person under regulation 11A should be interpreted in a similarly pragmatic way so that consultation is workable. The reference to NTA authorities was made by analogy:

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

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

*“there is no definition of what constitutes “consultation for the purpose of ref 11A... A titleholder will need to “demonstrate” to NOPSEMA that what it did constituted consultation appropriate and adapted to the nature of the interests of the relevant persons” (emphasis added).*

It is clear from the Court's statement in relation to consultation with organisations that a Titleholder will have some decisional choice in identifying which natural person(s) are to be approached, how the information will be given to allow the "relevant person" to assess the possible consequence of the proposed activities on their functions, interests or activities, and how the requisite consultation is undertaken. Woodside takes this to mean that consultation is not fixed to a rigid process, and indeed, will need to be adapted so that it is informed by the relevant person or group. Woodside has met its regulation 11A requirements through its consultation methodology (Section 5.5.2).

Consistent with the Tipakalippa Appeal, Woodside considers NTA-style “full group” meetings are not the only way for there to be compliance with regulation 11A in relation to Traditional Custodian relevant persons. Nominated representative corporations (such as the Prescribed Bodies Corporates (PBCs) established under the NTA) have a designated role of representing the views of their own member Traditional Custodians. They have established methods for engaging with their own members. Woodside will not undermine the purpose and authority of nominated representative corporations by requiring full group meetings where the nominated representative corporations have not requested engagement of members via full group meetings. We do not consider it appropriate for titleholders to direct or challenge the nominated representative corporations on how to engage with their members.

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

### **5.5.2 Consultation Method**

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

For example, the methodology for engaging with First Nations groups in the Northern Territory (not relevant for this EP) tends to centre around engagement through Aboriginal land councils (under the Aboriginal Land Rights (Northern Territory) Act 1976 (Cth)) as well as community meetings that target clan groups where they do not have PBCs or other nominated representative corporations to represent them. By contrast, recognition for First Nations groups and their nominated representative corporations in Western Australia falls under the Native Title Act 1993 (Cth) because the vast majority of the Western Australian coastline is settled under the native title regime. This means that the methodology and process for consultation in Western Australia places greater emphasis on, but is not limited to Native Title Representative Bodies and PBCs.

Native title determinations provide certainty about the appropriate Traditional Custodian groups that have the cultural authority to speak for country adjacent to the EMBA, and also help Woodside to

identify Traditional Custodian persons and groups asserting Traditional Custodianship. The Full Court in the Tipakalippa Appeal explicitly endorsed methods of consultation with groups of relevant persons that are appropriate and adapted to the characteristics of groups. Woodside's consultation methodology is adapted and appropriate to the recognised systems of communal interests in Western Australia.

In Western Australia (relevant for this EP), Woodside has sought to follow the established, effective and respectful means of communication used by Native Title Representative Bodies and nominated representative corporations (including PBCs) with their respective First Nations communities. Woodside follows these processes for the appropriate broad capture of individuals' awareness of our activities, to self-identify (Section 5.5.2.2), and to provide feedback to inform the management of environmental impacts and risks.

Using these tools, Woodside communicates information about Environment Plans by:

- advertising in relevant newspapers. This encourages self-identification, by advertising proposed activities widely through newspapers that have national and intra-state circulation, i.e., Koori Mail, National Indigenous Times, The West Australian;
- creating carefully considered Consultation Summary Sheets with information developed by an Indigenous member of the First Nations Team to remove jargon and provide relevant information for people to have informed understandings about the activities;
- direct contact through nominated representative corporations;
- utilising social media (ie. Facebook/Instagram), texts and emails. These mediums are the preferred communication methods used by Traditional Custodians throughout Western Australia and on that basis used by Native Title Representative Bodies and other government agencies and industry, to engage with Traditional Custodians or call meetings. First Nations woman, Professor Bronwyn Castle through 10 years of research found "Social media is an intrinsic part of daily life. The use of Facebook is around 20 per cent higher [among First Nations people] than the national average across all geographical locations" (Social media mob: being Indigenous online, Professor Bronwyn Carlson (2018));
- For ongoing consultation post regulation 11A consultation, Woodside introduced a Program of Ongoing Engagement with Traditional Custodians which sets out the commitment to ongoing engagement and support to care for and manage country, including Sea Country. The program was developed in response to Traditional Custodian feedback;
- Woodside has members of its First Nations team who are based in Karratha and Roebourne and who serve as on-Country points of contact for First Nations organisations and individuals. These team members have broad local knowledge and established, on-the-ground relationships within communities. This helps contribute to positive outcomes including encouraging First Nations attendance and involvement at Woodside's information sessions and Community roadshows. Team members on the ground engage in a great deal of preparatory work including by distributing information and providing notice to the community to support First Nations attendance at information sessions and Community roadshows;
- From the commencement of engagement with Traditional Custodians, Woodside seeks direction on how they prefer to be consulted and has consulted accordingly. Consultation processes that are informed by Traditional Custodians and co-designed on a case-by-case basis and includes their direction as to cultural protocols, structure of consultation and whom to appropriately consult with (such as elders).
- Holding meetings on country at a place and time agreed with the Traditional Custodians and offering and providing financial assistance for meeting expenses (as appropriate);

- Providing information specifically designed to be easily understood, to reach all relevant people, and give a reasonable period of time for those people to make an informed assessment of the possible consequences of the proposed activity on them.

### 5.5.2.1 Identification of Relevant Persons

In order to undertake consultation, Woodside has developed a methodology for identifying all relevant persons, in accordance with regulation 11A(1) of the Regulations (Section 5.2 and 5.3).

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

Woodside asks nominated representative corporations (such as PBCs) and Native Title Representative Bodies to identify individuals that should be consulted, and enables individuals to self-identify in response to national and local advertising, social media and community engagement opportunities (Section 5.5.2.3 and 5.9.1). Where there is a nominated representative corporation for an area, unless directed by the nominated representative corporation, Woodside does not directly approach individuals for consultation, because this has the potential to undermine the role of the nominated representative corporations. Approaching individuals directly is a practice that is no longer considered acceptable because of divisions it has been shown to cause in communities. In addition to asking for the identification of individuals, Woodside also asks nominated representative corporations to distribute consultation information to whomever the nominated representative corporations deem appropriate including members of the nominated representative corporations who are communal rights holders.

Having said this, as set out in further detail in Section 5.5.2.2 below, individuals are also given the opportunity to self-identify, consult and provide their own feedback on the proposed activity. When approached in this way, Woodside will engage individuals as relevant persons and will also (subject to any confidentiality or cultural restrictions) advise the nominated representative body of the consultation where it relates to cultural values. These methods of consultation are consistent with requirements for notification under the Native Title Act 1993 (Cth), such as under the future act provisions (section 29), which requires notification of the Native Title Representative Body, the PBC (or nominated representative) and notification through newspapers. The notification process has been selected as a respectful, practical and pragmatic analogue for consultation with First Nations peoples, rather than requiring members to be notified via a formal authorisation process which aims to seek, from members, authorisation of agreements and native title/compensation claims under the Native Title Act 1993 (Cth) .

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

### 5.5.2.2 Opportunity to Self-identify and Identifying Other Individuals

Woodside requests nominated representative corporations and the Native Title Representative Bodies to identify other individuals to consult with or individuals who may seek to self-identify for a proposed activity. Woodside also advertises broadly through Indigenous, national and local advertising, social media and community engagement opportunities (as described in Section 5.9.1) to provide individuals with an opportunity to consult. Woodside does not directly approach individuals for consultation, as this undermines the role of the nominated representative corporations (Section

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

- Woodside applies the principles of self-determination when consulting with Traditional Custodians by consulting through the Traditional Owners' authorised representative entities.
- Recognising the function of a PBC to represent communal interests and manage cultural values, Woodside requests that the information provided to representative entities is provided to their members but Woodside recognises the process is voluntary and Woodside cannot compel them to do so nor seek to audit the representative entities for compliance with any request
- Representative entities cannot provide membership details to Woodside due to individual confidentiality requirements.
- Woodside requests advice as to who else Woodside should be consulting but recognises the process is voluntary and cannot compel nominated representative corporations to provide this information.
- Modern Indigenous engagement practises rely on the building and maintaining of respectful relationships. Most nominated representative corporations to date have requested the building of that relationship, where one is not already in place.
- While Woodside has, in some cases, approached individual directors and elders outside of this process due to requirements imposed in Environment Plan consultation, this approach is considered inappropriate by modern Indigenous engagement standards, fundamentally undermining the authority of the authorised representative entity and can be detrimental to the relationship.

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

#### 5.5.2.2.1 Sufficient Information

Woodside recognises that the information sufficient to allow a person or organisation to make an informed assessment of the possible consequences of the proposed activity on their functions, interests or activities may vary and also may depend on the degree to which a relevant person is potentially affected.

Woodside produces a Consultation Information Sheet for each Environment Plan which is provided to relevant persons and organisations to provide the opportunity for feedback on the activity (Section 5.4.1). In response to Traditional Custodians' feedback, Woodside has tailored effective consultation methods for its activities, specifically designed for Traditional Custodians, so that information is provided in a form that is readily accessible and appropriate. The targeted Consultation Summary Sheet (as described in Section 5.9.1) developed and reviewed by Indigenous representatives so that content is appropriate to the intended recipients, is then provided to relevant Traditional Custodian groups. Phone calls are made to provide context to the consultation.

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



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

### 5.5.2.3 Reasonable Period for Consultation

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

### 5.5.2.4 Discharge of Regulation 11A

In relation to Traditional Custodian relevant persons (and all relevant persons), Woodside has discharged its duty under regulation 11A. Woodside considers that consultation under regulation 11A is complete (Section 5.4.3).

## 5.6 Providing Feedback and Assessment of Merit of Objections or Claims

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

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

Woodside accepts feedback and engages in consultation in order to achieve the aims set out in Section 5.2. Woodside recognises that there are persons and organisations that take a view that Woodside's operations and/or growth projects should be stopped or at least delayed as far as possible. 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 other persons Woodside chose to contact (see Section 5.3.4). This information is summarised in Appendix F, Table 1 and Table 2 of the EP and includes a statement of Woodside's response, or proposed response, if any, to each objection and claim.

In accordance with regulation 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 regulation 11A, must be contained in the sensitive information part of the plan and not anywhere else in the plan.

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## 5.7 Ongoing Consultation

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

As per Woodside’s ongoing consultation approach (refer to Section 7.17.2), 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 7.15).

## 5.8 Woodside’s Methodology to Identify Relevant Persons

### 5.8.1 Identification of Relevant Persons Under Regulation 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* (January 2023), which describes where the Department is a relevant agency under the Environment Regulations, as well as experience and knowledge that Woodside has gained from years of operating 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:

<b>Government departments / agencies – marine</b>	Agencies with legislated responsibilities for use of the marine environment.
<b>Government departments / agencies – environment</b>	Agencies with legislated responsibilities for the protection of the marine environment.
<b>Government departments / agencies – industry</b>	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 Petroleum Activities Program in a manner that prevents a substantially adverse effect on the potential displacement of marine users, Woodside therefore consults AMSA – Marine Safety and AHO on its proposed activities. Woodside considers each of the responsibilities of the departments and agencies and determines those that would either be involved in the incident response itself or in relation to the regulatory or decision-making capacity with respect to planning for the unlikely event of a worst-case hydrocarbon release

incident response specific to the Petroleum Activities Program. Feedback received, if any, is assessed in accordance with the intended outcome of consultation (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 5.8) and summarised at Appendix F, Table 1 and Table 2 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.

### 5.8.2 Identification of Relevant Persons Under Regulation 11A(1)(d)

Relevant persons under regulation 11A (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.

- As a general proposition, Woodside assesses whether a person or organisation is a relevant person having regard to:
  - whether a person or organisation has functions interests or activities or that overlap with the PAA and EMBA; and
  - whether a person or organisation's functions, interests or activities may be affected by Woodside's proposed planned or unplanned activities.
- This assessment will include applying professional judgement, knowledge and current literature.
- Further, to assist in identifying the full range of relevant persons, Woodside considers the impacts and risks associated with its proposed activities and considers the broad categories of relevant persons who may be affected by the activities. For this EP, the broad categories are identified in Table 5-1 below and identification methodology applied as set out in Table 5-2.
- The list of those persons or organisations assessed as relevant and persons or organisations Woodside chose to contact 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 applying the categories of relevant persons methodology outlined in Table 5-2, as appropriate.
- Feedback from relevant persons is summarised at Appendix F, Table 1. Feedback from persons assessed as not relevant but whom Woodside chooses to contact or self-identified and Woodside assessed as not relevant are summarised at Appendix F, Table 2.

**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 <i>Fisheries Management Act 1991</i> (Cth) and Western Australian <i>Fish Resources Management Act 1994</i> (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 <i>OPGGGS Act</i> and associated regulations.
Peak industry representative bodies	Recognised peak organisation(s) for the oil and gas sector.
Traditional Custodians (individuals and/or groups/entity)	Traditional Custodians are First Nations Australians who hold cultural rights and interests, or have cultural functions or perform cultural activities over particular lands and waters.  Where a First Nations person, group or entity self-identifies and/or asserts cultural rights, interests, functions or activities they will be included in the definition of Traditional Custodian for the purpose of this Environment Plan.
Nominated Representative Corporations	Nominated representative corporations are Traditional Custodians' nominated representative institutions such as Prescribed Body Corporates (PBC).  PBCs are established under the Native Title Act 1993 by Traditional Custodians to represent their entire Traditional Custodian group (defined broadly by reference to descents from an ancestor set who were known to be the Traditional Custodians at the time of European colonisation) and their interests including, among other things, management and protection of cultural values.
Native Title Representative Bodies	A Representative Aboriginal/Torres Strait Islander Bodies (RATSIB) is a regional organisation appointed under the Native Title Act 1993 (NTA) with prescribed functions, set out in Part 11 of the Native Title Act 1993, which relate to: facilitation and assistance; certification; dispute resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies.
Historical heritage groups or organisations	Legislated or government enlisted groups or organisations responsible for the management of marine heritage.
Local government and recognised local community reference/liaison groups or organisations	Local government governed by the <i>Local Government Act 1995</i> (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 11A(1)(d) – by category**

Category	Relevant person identification methodology
<p>Commercial fisheries (Commonwealth and State) and peak representative bodies</p>	<p>Woodside assesses relevance for commercial fisheries (Commonwealth and State) and their representative bodies using the following next steps in its methodology:</p> <ul style="list-style-type: none"> <li>• Defining the parameters having regard to timing, location and duration of the proposed petroleum activity.</li> <li>• Confirming whether the EMBA overlaps with the fisheries management area (i.e. the spatial area the fishery is legally permitted to fish in) (see Section 4.9.2).</li> <li>• Woodside acknowledges WAFIC’s consultation guidance<sup>12</sup> (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 J).</li> <li>• For Commonwealth and State commercial fisheries, Woodside assesses the potential spatial and temporal extent for interaction with the fishery by reviewing AFMA ABARES and DPIRD Fishcube data within the Operational Area and EMBA (see Section 4.9.2).</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>• State commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.9.2) are assessed as relevant to the proposed activity. Woodside acknowledges WAFIC’s consultation guidance<sup>1</sup> (see above) and applies this by: <ul style="list-style-type: none"> <li>- directly consulting fishery licence holders that are assessed as having a potential for interaction in the Operational Area; and</li> <li>- consulting fisheries that are assessed as having a potential for interaction in the EMBA via WAFIC.</li> </ul> </li> <li>• Commonwealth commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see Section 4.9.2) are assessed as relevant to the proposed activity.</li> <li>• 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.</li> </ul>
<p>Recreational marine users and peak representative bodies</p>	<p>Woodside assesses relevance for recreational marine users and peak representative bodies using the following next steps in its methodology:</p> <ul style="list-style-type: none"> <li>• From Woodside knowledge and operating experience, knowledge of recreational marine users in the area. This assessment is both activity and location based.</li> <li>• Defining the parameters having regard to timing, location and duration of the proposed petroleum activity.</li> <li>• 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.</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul>

<sup>12</sup> [Consultation Approach for Unplanned Events - WAFIC](#)

Category	Relevant person identification methodology
	<p>These representative bodies are identified via Woodside’s existing consultation list, which is updated as appropriate via advice from known groups and DPIRD.</p>
<p>Titleholders and Operators</p>	<p>Woodside assesses relevance for other titleholders and operators using the following next steps in its methodology:</p> <ul style="list-style-type: none"> <li>• Using WA Petroleum Titles (DMIRS-011) to determine overlap with other Titleholders or Operators permit areas within the EMBA.</li> <li>• From Woodside knowledge and operating experience, knowledge of other operators in the area.</li> <li>• Woodside produces a map showing the outcome of this assessment.</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>• Titleholders and Operators whose permit areas are identified as having an overlap within the EMBA are assessed as relevant.</li> </ul>
<p>Peak industry representative bodies</p>	<p>Woodside assesses relevance for peak industry representative bodies using the following next steps in its methodology:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Review of Woodside’s existing consultation list.</li> <li>• 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.</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>• Peak industry representative bodies whose responsibilities are identified as having an overlap with Woodside’s proposed activities within the EMBA are assessed as relevant.</li> </ul>
<p>Traditional Custodians (individuals and/or groups/entity) and Nominated Representative Corporations</p>	<p>Consistent with its understanding of the matters discussed in Section 4.9.1 and 5.5 to identify Traditional Custodian groups or individuals, Woodside:</p> <ul style="list-style-type: none"> <li>• Uses existing systems of recognition to identify First Nations groups who overlap or are coastally adjacent to the EMBA (for example, recognition provided under native title or cultural heritage legislation, or marine park management plans, or identification by other First Nations groups or entities) (Section 4.9.1).</li> <li>• Notifies and invites consultation with First Nations people through their nominated representative corporation (for example PBCs); or, in the case of native title, and where appropriate, the Native Title Representative Body (Section 5.5.2.1).</li> <li>• Requests the nominated representative body to forward the notifications and invitations to consult to their members (members are individual communal rights holders) (Section 5.5.2.1)</li> <li>• Requests advice as to other First Nations groups or individuals that should be consulted (Section 5.5.2.1)</li> <li>• Requests the nominated representative body to provide consultation materials to its members (Section 5.5.2.2.1)</li> <li>• Advertises widely so as to invite self-identification and consultation by First Nations groups and/or individuals (Section 5.5.2.2.1)</li> </ul> <p>Further detail to Woodside’s methodology is as follows.</p> <p>Woodside uses the databases of the National Native Title Tribunal (Section 4.9.1):</p> <ul style="list-style-type: none"> <li>• to understand whether there are any Native Title Claims (historical or current) or determinations overlapping or coastally adjacent to the EMBA;</li> <li>• to understand whether there are any relevant Indigenous Land Use Agreements (ILUA), registered with the National Native Title Tribunal that overlap or are adjacent to the EMBA that may identify Traditional Custodians or representative bodies to contact regarding potential cultural values.</li> </ul> <p>Where there is a positive determination of native title, contacting the PBC or, where their representative is a Native Title Representative Body contacting the Native Title Representative Body.</p>

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Category	Relevant person identification methodology
	<p>Where appropriate, contacting the relevant Native Title Representative Body to request a list of any First Nations groups asserting Traditional Custodianship over an area of coastline adjacent to the EMBA.</p> <p>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.</p> <p>In the WA context, any Aboriginal Corporation appointed as a Local Aboriginal Cultural Heritage Service (LACHS) under the Aboriginal Cultural Heritage Act 2021 for an area that overlaps the EMBA.</p> <p>First Nations groups or individuals identified by a Traditional Custodian, nominated representative corporation, Native Title Representative Body.</p> <p>Request to the PBC to distribute Woodside consultation materials through its membership. Woodside is unable to contact this membership through any other means.</p> <p>Woodside has a number of public notification and information sharing processes by which individual Traditional Custodians can become aware of the proposed activity, its risks and impacts, and self identify.</p> <p>Individuals that consider their functions, interests or activities may be affected by a proposed activity must self-identify for each Environment Plan. Woodside does not presume that self-identification for an activity, covered by another Environment Plan, automatically means that an individual/s functions, interest and activities may be affected by other activities where EMBA's overlap. This decision is for the individual to make. The public notification, information sharing, and consultation processes Woodside puts in place enables Traditional Custodians to become aware of proposed activities, assess any risks and impacts to their values, and enable individuals to self-identify.</p> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>Traditional Custodian groups, entities or individuals and Nominated Representative Corporations who are identified through the above methodology and overlap or are coastally adjacent to the EMBA are assessed as relevant.</li> </ul>
Native Title Representative Bodies	<p>Woodside assesses relevance for Native Title Representative Bodies using the following steps in its methodology (Section 4.9.1):</p> <ul style="list-style-type: none"> <li>A Representative Aboriginal/Torres Strait Islander Bodies (RATSIB) is a regional organisation appointed under the Native Title Act 1993 (NTA) with prescribed functions set out in Part 11 of the Native Title Act 1993, which relate to: facilitation and assistance; certification; dispute resolution; notifications; agreement making. They are also known, and referred to here, as Native Title Representative Bodies.</li> <li>Review of National Native Title Tribunal RATSIB areas that overlap or are coastally adjacent to the EMBA.</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>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.</li> </ul>
Historical heritage groups or organisations	<p>Woodside assesses relevance for groups or organisations whose responsibilities are focused on historical heritage using the following next steps in its methodology:</p> <ul style="list-style-type: none"> <li>Using the Australasian Underwater Cultural Heritage Database to assess any known records Maritime Cultural Heritage sites (shipwrecks, aircraft and relics) within the EMBA (Section 4.9.1).</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>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.</li> </ul>
Local government and recognised local community reference/liaison groups or organisations	<p>Woodside assesses relevance for local government and recognised local community reference/liaison groups or organisations using the following next steps in its methodology:</p> <ul style="list-style-type: none"> <li>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</li> </ul>

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Category	Relevant person identification methodology
	<p>any overlap between the local government’s defined area of responsibility and the EMBA.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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).</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>• The local government whose defined area of responsibility overlaps the EMBA is assessed as relevant.</li> <li>• 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.</li> </ul>
Other non-government groups or organisations	<p>Woodside assesses relevance for other non-government groups or organisations using the following next steps in its methodology:</p> <ul style="list-style-type: none"> <li>• Review of Woodside’s existing consultation list.</li> <li>• 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.</li> <li>• Organisation has a publicly available mission statement (or purpose) that clearly describes their collective functions, interests or activities.</li> <li>• 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.</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>
Research institutes and local conservation groups or organisations	<p>Woodside assesses relevance for research institutes and local conservation groups or organisations using the following next steps in its methodology:</p> <ul style="list-style-type: none"> <li>• Review of Woodside’s existing consultation list.</li> <li>• Website search for research institutes that may operate within the EMBA. This assessment is both activity and location based.</li> <li>• Website search for local conservation groups or organisations that regularly conduct conservation activities within the EMBA.</li> </ul> <p>Assessment of relevance:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Local environmental conservation groups who regularly conduct conservation activities or have demonstrated conservation functions, interests or activities within</li> </ul>



Category	Relevant person identification methodology
	the EMBA are assessed as relevant. This assessment is both activity and location based.

### 5.8.3 Identification of Relevant Persons Under Regulation 11A(1)

Woodside adopts a case-by-case approach for each EP to assess relevance under regulation 11A(1)(e).

### 5.8.4 Assessment of Relevant 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 and Appendix F, Table 1.

Persons or organisations that Woodside assessed as not relevant but nonetheless chose to contact at its discretion in accordance with Section 5.3.4 or self-identified and Woodside assessed as not relevant are summarised at Table 5-3 and Appendix F, Table 2.

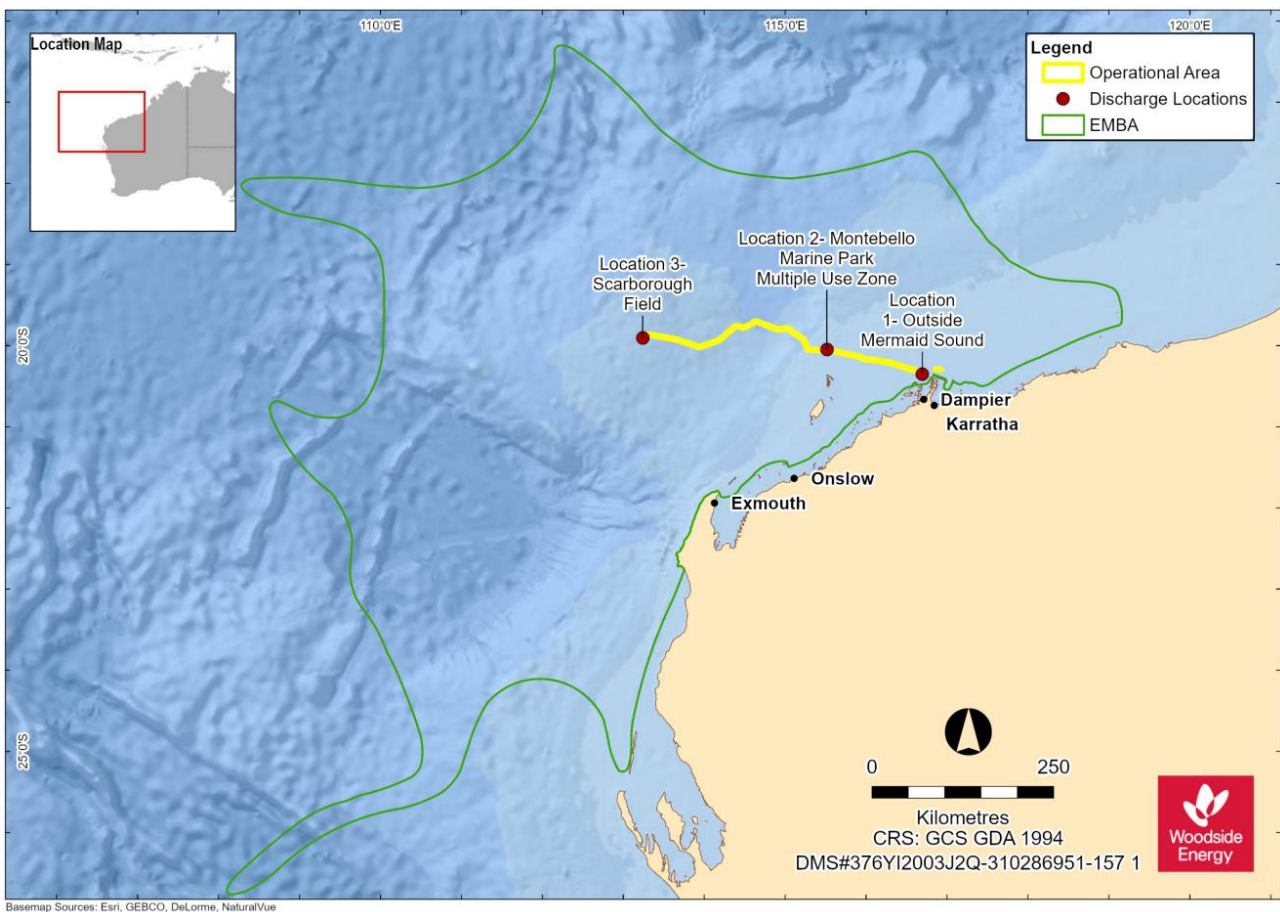


Figure 5-3: Operational Area and EMBA for this Environment Plan.

**Table 5-3: Assessment of relevance**

Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
<b>Commonwealth and WA State Government Departments or Agencies – Marine</b>			
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	Responsible for implementing Commonwealth policies and programs to support agriculture,	Woodside has applied its methodology for ‘Government departments / agencies – marine’ under regulation 11A(1)(a).	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
(formerly DAWE)	fishery, food and forestry industries	The North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA. 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 – marine’ under regulation 11A(1)(b). Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Specimen Shell Managed Fishery, Nickol Bay Prawn Managed Fishery, Western Australian Sea Cucumber Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, West Coast Deep Sea Crustacean Managed Fishery and Onslow Prawn Managed Fishery are active in the Operational Area. Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Fishery, Shark Bay Crab Managed Fishery, Shark Bay Prawn Managed Fishery, Shark Bay Scallop Managed Fishery, West Coast Rock Lobster Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery and Onslow Prawn Managed 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 – marine’ 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 – marine’ under regulation 11A(1)(b). There is known Maritime Cultural Heritage overlapping the EMBA.	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Pilbara Ports Authority	Responsible for the operation of the Port of Dampier.	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(b). The proposed activity has the potential to impact Pilbara Ports Authority's responsibilities as the Operational Area and EMBA overlaps the Pilbara Ports Authority's area of responsibility.	Yes
<b>Commonwealth and WA State Government Departments or Agencies – Environment</b>			
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel) (formerly DAWE)	DCCEEW administers, implements and enforces the Biosecurity Act 2015. The Department requests to be consulted where an activity has the potential to transfer marine pests. DCCEEW 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 Agriculture (DCCEEW) (formerly DAWE)	Responsible for implementing Commonwealth policies and programs to support climate change, sustainable energy use,	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.	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	<p>water resources, the environment and our heritage.</p> <p>Administers the Underwater Cultural Heritage Act 2018 in collaboration with the States, Northern Territory and Norfolk Island, which is responsible for the protection of shipwrecks, sunken aircraft and other types of underwater heritage and their associated artefacts in Commonwealth waters.</p>	<p>There are known Maritime Cultural Heritage overlapping the EMBA.</p>	
<p>Director of National Parks (DNP)</p>	<p>Responsible for the management of Commonwealth parks and conservation zones.</p>	<p>Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(a).</p> <p>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).</p>	<p>Yes</p>
<p>Ningaloo Coast World Heritage Advisory Committee (NCWHAC)</p>	<p>Supports the DBCA to manage the Ningaloo Coast World Heritage Area.</p>	<p>Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(a).</p> <p>The proposed activity has the potential to impact NCWHAC's responsibilities as the EMBA overlaps the Ningaloo Marine Park.</p>	<p>Yes</p>
<p>Department of Biodiversity, Conservation and Attractions (DBCA)</p>	<p>Responsible for managing WA's parks, forests and reserves to achieve wildlife conservation and provide sustainable recreation and tourism opportunities.</p>	<p>Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(b).</p> <p>The EMBA for the proposed activities overlap WA parks, forests or reserves. Activities have the potential to impact marine tourism in the EMBA.</p>	<p>Yes</p>

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
<b>Commonwealth and State Government Departments or Agencies – Industry</b>			
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
<b>Commonwealth Commercial fisheries and representative bodies</b>			
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 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 EMBA it has not been active in the 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). The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes
Western Skipjack Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d).	No

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		<p>Although the fishery overlaps EMBA, it has not been active in the EMBA within the last 5 years.</p> <p>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.</p>	
Western Tuna and Billfish Fishery	Commonwealth commercial fishery	<p>Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d).</p> <p>The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.</p>	Yes
Commonwealth Fisheries Association (CFA)	Represents the interests of commercial fishers with licences in Commonwealth waters	<p>Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d).</p> <p>The North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery and Western Tuna and Billfish Fishery are active in the EMBA.</p> <p>CFA's functions, interests or activities 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.</p>	Yes
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	Represents the interests of the Southern Bluefin Tuna Fishery and Western Skipjack Fishery	<p>Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d).</p> <p>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.</p> <p>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.</p>	No
Tuna Australia	Represents the interests of the Western Tuna and Billfish Fishery	<p>Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d).</p> <p>The Western Tuna and Billfish Fishery is active in the EMBA.</p> <p>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.</p>	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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
<b>State Commercial fisheries and representative bodies</b>			
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). The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
South West Coast Salmon Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders, given fishers are active south of Perth and from the beach (previous WAFIC advice).	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). The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
Pilbara Crab Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
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). The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 overlaps the Operational Area and EMBA and has been active in the Operational Area and 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 overlaps the Operational Area and EMBA and has been active in the Operational Area and 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). Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders given fishing methods and location for species fished by licence holders (fishing effort is mostly focussed in shallow coastal waters of 10-15 m depth, with a maximum depth of 35 m) (Lulofs et al. 2002).	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 overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
WA North Coast Shark Managed Fishery	State commercial fishery	The WA North Coast Shark Fishery (WANCSF) management area extends from longitude 114°06'E to 123°45'E (Patterson et al., 2021). However, fishing activity has not been reported by this fishery since the 2008-2009 fishing season (Patterson et al., 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery within the EMBA.	No
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). The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
Exmouth Gulf Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d).	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		The fishery does not overlap the Operational Area. The fishery has been active in the EMBA within the last 5 years.	
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). The fishery does not overlap the Operational Area. The fishery has been active in the EMBA within the last 5 years.	Yes
Shark Bay Crab Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA in the last 5 years.	Yes
Shark Bay Prawn Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA in the last 5 years.	Yes
Shark Bay Scallop Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA in the last 5 years.	Yes
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 Operational Area. The fishery overlaps the EMBA and has been active in the EMBA in the last 5 years.	Yes
Abalone Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery overlaps the Operational Area and EMBA but has not been active in the Operational Area or EMBA in the last five 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 Operational Area. The fishery overlaps the EMBA but has not been active in the EMBA in the last 5 years.	No

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 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 overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
Pilbara Line Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery overlaps the Operational Area and EMBA and has been active in the Operational Area and EMBA within the last 5 years.	Yes
Western Australian Fishing Industry Council (WAFIC)	Represents the interests of commercial fishers with licences in State waters.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Specimen Shell Managed Fishery, Nickol Bay Prawn Managed Fishery, Western Australian Sea Cucumber Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, West Coast Deep Sea Crustacean Managed Fishery and Onslow Prawn Managed Fishery are active in the Operational Area. Exmouth Gulf Prawn Managed Fishery, Gascoyne Demersal Scalefish Fishery, Shark Bay Crab Managed Fishery, Shark Bay Prawn Managed Fishery, Shark Bay Scallop Managed Fishery, West Coast Rock Lobster Managed Fishery, West Coast Deep Sea Crustacean Managed Fishery and Onslow Prawn Managed Fishery are active in the EMBA. WAFIC's functions may be relevant to the activity as the peak representative body for State fisheries.	Yes
Western Rock Lobster Council	Represents the interests of the Western Rock Lobster Managed Fishery.	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The Western Rock Lobster Managed Fishery is active within the EMBA. The Western Rock Lobster Council's functions may be relevant to the activity as the Western Rock Lobster Managed Fishery is active in the EMBA.	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
<b>Recreational marine users and representative bodies</b>			
Karratha recreational marine users Nickol Bay Sport Fishing Club Archipelago Adventures Hampton Harbour Boat & Sailing Club King Bay Game Fishing Club Marine Rescue Dampier Port Walcott Volunteer Marine Rescue Port Walcott Yacht Club Reef Seeker Charters West Pilbara Volunteer Sea Search and Rescue Group	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 Andro Maritime Services Australia Aquatic Adventure Exmouth Birds Eye View Blue Horizon Charters Blue Lightning Charters Cape Immersion Tours Coastal Adventure Tours Coral Bay Ecotours Cruise Ningaloo Dampier Island Tourism Dive Ningaloo	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

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Evolution Fishing Charters Exmouth Adventure Co. Exmouth Dive Centre Exmouth Fly Fishing Exmouth Game Fishing Club Indian Chief Charters Innkeeper Sport Fishing Charter Kings Ningaloo Reef Tours Live Ningaloo Mahi Fishing Charters Montebello Island Safaris Ningaloo Aviation Ningaloo Blue Ningaloo Coral Bay Boats Ningaloo Discovery Ningaloo Ecology Cruises Ningaloo Fly Fishing Ningaloo Marine Interaction Ningaloo Reef Dive Ningaloo Reef to Range Tours Ningaloo Safari Tours Ningaloo Sportfishing Charters Ningaloo Whaleshark n Dive Ningaloo Whaleshark Swim Ocean Eco Adventures On Strike Charters Peak Sportfishing Charters Pelican Charters			

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Sail Ningaloo Sea Force Charters Set the Hook The Mobile Observatory Three Islands Top Gun Charters Ultimate WaterSports Venture Ningaloo View Ningaloo Warrior Princess Charters Yardi Creek Boat Tours			
Gascoyne Recreational Marine Users Silverado Charters Pty Ltd Reel Force Charters Pty Ltd D & N Nominees Pty Ltd Lyons Family Super Pty Ltd Seafresh Holdings Pty Ltd Eco-Abrolhos Pty Ltd C Emery Fishing Pty Ltd On Strike Charters (Wa) Pty Ltd Melkit Pty Ltd Maritime Engineering Services Pty Ltd G. C. Bass Nominees Pty Ltd Brefjen Nominees Pty Ltd	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

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
W.A Maritime Investments Pty Ltd Blue Juice Tours Pty Ltd Surefire Marine Services Pty Ltd Makalee Pty Ltd L & S Family Holdings Pty Ltd Bondall Pty Ltd Kw Marine Pty Ltd Sharkbay Charters Pty Ltd Bluecity Enterprises Pty Ltd Jostan Holdings Pty Ltd Monkey Mia Yacht Charters Pty Ltd On Strike Charters (Wa) Pty Ltd Rainfield Pty Ltd Monster Sportfishing Adventures Pty Ltd Lulamanzi Investments Pty Ltd Millennial Charters Pty Ltd Chapel Nominees Pty Ltd Regalchoice Holdings Pty Ltd Fawesome Expeditions Pty Ltd On Strike Charters (Wa) Pty Ltd The Great Escape Charter Company Pty Ltd Aoa International Pty Ltd			

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Fire Tiger Pty Ltd			
Pilbara / Kimberley Recreational Marine Users Willie Creek Pearl Farm Pty Ltd Super Yachts Perth Pty Ltd Silverado Charters Pty Ltd Bloor Street Investments Pty Ltd Lugger Enterprises Pty Ltd Eco-Abrolhos Pty Ltd C Emery Fishing Pty Ltd Discovery Holiday Parks Pty Limited Kimberley Marine Pty Ltd Coral Princess Cruises (Nq) Pty Ltd Marine Agents Australia Pty Ltd Maritime Engineering Services Pty Ltd G. C. Bass Nominees Pty Ltd Coastway Investments Pty Ltd Kcc Group Pty Ltd Cm Ventures Pty Ltd Lombadina Aboriginal Corporation Australian Port And Marine Services Pty Ltd	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

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Hartley Motorcycles Pty Ltd Humbug Fishing Pty Ltd Brefjen Nominees Pty Ltd Melkit Pty Ltd W.A Maritime Investments Pty Ltd Blue Juice Tours Pty Ltd Kw Marine Pty Ltd L & S Family Holdings Pty Ltd Bondall Pty Ltd Lake Argyle Cruises Pty Ltd Sealife Charters Pty Ltd Mal Miles Adventures Pty Ltd Mackerel Islands Pty Ltd Diversity Charter Company Wa Pty Ltd Split Tide Pty Ltd Broome Tours Pty Ltd North Star Cruises Australia Pty Ltd Charter Express Pty Ltd Sea 2 Pty Ltd Hotel And Resort Investments Pty Ltd L & S Family Holdings Pty Ltd Down The Line Charters Pty Ltd Kingfisher Island Resort Pty Ltd Rstg Pty Limited			

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Sealife Charters Pty Ltd Coral Princess Cruises (Nq) Pty Ltd Kimberley Quest Adventures Pty Ltd Monster Sportfishing Adventures Pty Ltd Ocean Charters Pty Ltd Lulamanzi Investments Pty Ltd Millennial Charters Pty Ltd Chapel Nominees Pty Ltd Fawesome Expeditions Pty Ltd The Great Escape Charter Company Pty Ltd Aoa International Pty Ltd Kimberley Getaway Cruises Pty Ltd King Sound Resort Hotel Pty Ltd			
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

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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
<b><i>Titleholders and Operators</i></b>			
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
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

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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
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
Jadestone	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
KATO Energy / KATO Corowa / KATO NWS / KATO Amulet	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

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Finder No 9 /10 / 16 / 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
Coastal Oil and 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
Bounty Oil and 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
Vermilion Oil and 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
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).	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Titleholder or Operator's permit areas overlaps the EMBA.	
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 'Additional Persons' and '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
<b>Peak Industry Representative bodies</b>			
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
<b>Traditional Custodians and nominated representative corporations</b>			
Murujuga Aboriginal Corporation (MAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d). MAC is the Nominated Representative Corporation under the Burrup and Maitland Industrial Estates Agreement (BMIEA), which is coastally adjacent to the EMBA and underpins land access for the onshore component of the Scarborough Project. The EMBA does not overlap the Murujuga National Park. MAC was established to represent the members of competing Native Title claims over Murujuga, collectively known as the Ngarda Ngarli and comprising Mardudhunera, Ngarluma, Yaburara, Yindjibarndi and Wong-Goo-Tt-Oo people. The determination of the competing Native Title claims resulted in no native title being found over the lands subject to the BMIEA or below the low water mark. MAC also owns and co-manages the Murujuga National Park, is responsible for the Dampier Archipelago National Heritage Place and is progressing the World Heritage nomination of the Murujuga Cultural Landscape. Woodside has consulted with MAC in regard to the Scarborough Project area generally since 2018 and MAC has been involved in ethnographic surveys that included the planned activities of this EP.	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		As discussed further below, 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 Appendix F, Table 1).	
Ngarluma Aboriginal Corporation (NAC)	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The Ngarluma People's native title determination area does not overlap the EMBA. The determination, for which NAC is the Registered Native Title Body Corporate, is coastally adjacent to the EMBA.</p> <p>The historical Ngarluma/Yindjibarndi native title claim overlaps the Operational Area.</p> <p>NAC is party to the Anketell Port, Infrastructure Corridor and Industrial Estates Agreement, which overlap the EMBA.</p> <p>NAC is party to the RTIO Ngarluma Indigenous Land Use Agreement (Body Corporate Agreement), which is adjacent to the EMBA.</p> <p>The EMBA overlaps the Dampier Commonwealth Marine Park, over which the North-west Marine Parks Network Management Plan specifies NAC as representing people whose sea country extends into the marine park which is valued for cultural identify, health and wellbeing.</p> <p>As noted above (and discussed further below), Woodside sought 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 Appendix F, Table 1).</p>	Yes
Wirrawandi Aboriginal Corporation (WAC)	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The Yaburara &amp; Mardudhunera People determination, for which WAC is the Registered Native Title Body Corporate, overlaps the EMBA.</p>	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		<p>WAC is party to the KM &amp; YM ILUA and Cape Preston Project Deed (YM Mardie ILUA), which overlap the EMBA.</p> <p>WAC is party to the Cape Preston West Export Facility ILUA, which is coastally adjacent to the EMBA.</p>	
<p>Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)</p>	<p>Representative Aboriginal Corporation</p>	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim, the determination of which NTGAC and YAC are the Registered Native Title Bodies Corporate, overlaps the EMBA.</p> <p>The NTGAC is also party, with the WA State Government, to the Ningaloo Conservation Estate Indigenous Land Use Agreement (the ILUA) which overlaps the EMBA. The NTGAC is responsible for the joint management of the inner Ningaloo Marine Park (State Waters), the Cape Range National Park and new conservation areas extending along the Ningaloo Coast, which runs in parallel to the outer Ningaloo Marine Park in Commonwealth waters.</p> <p>The NTGAC is also party to the Gnarloo ILUA, which is coastally adjacent to the EMBA.</p> <p>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.</p>	<p>Yes</p>
<p>Yinggarda Aboriginal Corporation (YAC)</p>	<p>Representative Aboriginal Corporation</p>	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim, the determination for which NTGAC and YAC are the Registered Native Title Bodies Corporate, overlaps the EMBA.</p> <p>YAC is party to the Brickhouse and Yinggarda Aboriginal Corporation ILUA and Quobba – Yinggarda Pastoral ILUA, which are coastally adjacent to the EMBA.</p> <p>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.</p>	<p>Yes</p>

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Robe River Kuruma Aboriginal Corporation	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>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.</p> <p>The Robe River Kuruma Aboriginal Corporation is party to the KM &amp; YM ILUA, which overlaps the EMBA.</p> <p>The Robe River Kuruma Aboriginal Corporation is party to the RTIO Kuruma Marthudunera People ILUA, which is coastally adjacent to the EMBA.</p>	Yes
Yindjibarndi Aboriginal Corporation	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The Ngarluma/Yindjibarndi native title claim, for which NAC and the Yindjibarndi Aboriginal Corporation are the Registered Native Title Bodies Corporate, overlaps the EMBA.</p> <p>The EMBA overlaps the Dampier Commonwealth Marine Park, over which the North-west Marine Parks Network Management Plan specifies the Yindjibarndi Aboriginal Corporation as representing people whose sea country extends into the marine park which is valued for cultural identify, health and wellbeing.</p>	Yes
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>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.</p> <p>BTAC is also party to the Macedon ILUA which is coastally adjacent to the EMBA.</p>	Yes
Malgana Aboriginal Corporation	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>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.</p> <p>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.</p>	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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.	
Nanda Aboriginal Corporation	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>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.</p> <p>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.</p>	Yes
Kariyarra Aboriginal Corporation	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The Kariyarra native title claim, for which the Kariyarra Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBA.</p> <p>The Kariyarra Aboriginal Corporation is party to the Kariyarra and State ILUA, which is coastally adjacent to the EMBA.</p>	Yes
Wanparta Aboriginal Corporation	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The Ngarla and Ngarla #2 (Determination Area A) native title claim, for which the Wanparta Aboriginal Corporation is the Registered Native Title Body Corporate, overlaps the EMBA.</p> <p>The Wanparta Aboriginal Corporation is party to the Ngarla Pastoral ILUA, which is coastally adjacent to the EMBA.</p> <p>The EMBA overlaps the Eighty Mile Beach Commonwealth Marine Park, over which the North-west Marine Parks Network Management Plan specifies the Wanparta Aboriginal Corporation as representing people whose sea country extends into the marine park which is valued for cultural identify, health and wellbeing as well as an unbroken, deep spiritual connection and staple foods of living cultural value.</p>	Yes

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Stakeholder	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Karajarri Traditional Lands Association	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The EMBA overlaps the Eighty Mile Beach Commonwealth Marine Park, over which the North-west Marine Parks Network Management Plan, specifies the Karajarri Traditional Lands Association as representing people whose sea country extends into the marine park which is valued for cultural identify, health and wellbeing as well as an unbroken, deep spiritual connection and staple foods of living cultural value.</p>	Yes
Nyangumarta Karajarri Aboriginal Corporation	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The EMBA overlaps the Eighty Mile Beach Commonwealth Marine Park, over which the North-west Marine Parks Network Management Plan specifies the Nyangumarta Karajarri Aboriginal Corporation as representing people whose sea country extends into the marine park which is valued for cultural identify, health and wellbeing as well as an unbroken, deep spiritual connection and staple foods of living cultural value.</p>	Yes
Nyangumarta Warrarn Aboriginal Corporation	Representative Aboriginal Corporation	<p>Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d).</p> <p>The EMBA overlaps the Eighty Mile Beach Commonwealth Marine Park, over which the North-west Marine Parks Network Management Plan specifies the Nyangumarta Warrarn Aboriginal Corporation as representing people whose sea country extends into the marine park which is valued for cultural identify, health and wellbeing as well as an unbroken, deep spiritual connection and staple foods of living cultural value.</p>	Yes

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<b>Native Title Representative Bodies</b>			
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body	<p>Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 11A(1)(d).</p> <p>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.</p> <p>The NTGAC's nominated representative is YMAC. Woodside has therefore consulted the NTGAC via YMAC.</p> <p>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.</p> <p>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.</p> <p>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.</p>	Yes
Kimberley Land Council (KLC)	Land Council and Native Title Representative Body	<p>Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 11A(1)(d).</p> <p>KLC is the Native Title Representative Body for the Kimberley region of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders.</p> <p>KLC's functions may be relevant to the proposed activity in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation.</p>	Yes
<b>Self-identified First Nations Groups</b>			
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	Traditional Custodian - entity	<p>Woodside has applied its methodology for 'Traditional Custodians' under regulation 11 A 1 (d).</p> <p>Prior to the resolution of the Ngarluma and Yindjibarndi native title claim, the Ngarluma and Yindjibarndi registered native title claimants, the NWS JVs and Woodside entered into the Northwest Shelf Agreement 1998 . In 1999 the Ngarluma and Yindjibarndi native title claim was settled with the Court appointing, at the request of the common law native title holders, the Ngarluma Aboriginal Corporation (NAC) as PBC to represent the Ngarluma people and the Yindjibarndi Aboriginal Corporation (YAC) as PBC to appoint Yindjibarndi people.</p>	Yes

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		<p>Both NAC and YAC are relevant people.</p> <p>NYFL was subsequently created to act as Trustee for the Trust under the Agreement and to carry on the business of enterprise development, investment and social welfare.</p> <p>NYFL self-identified and has advised it is relevant for this EP.</p>	
<b>Historical cultural heritage groups or organisations</b>			
Western Australian Museum	Manages 200 shipwreck sites of the 1,500 known to be located off the Western Australian coast.	<p>Woodside has applied its methodology for 'Historical cultural heritage groups or organisations' under regulation 11A(1)(d).</p> <p>There are known shipwrecks overlapping the EMBA which the Western Australian Museum may be responsible for.</p>	Yes
<b>Local government and community representative groups or organisations</b>			
Shire of Exmouth	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Exmouth, Learmonth and North West Cape.	<p>Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d).</p> <p>The Shire of Exmouth's area of responsibility overlaps the EMBA.</p>	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.	<p>Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d).</p> <p>The City of Karratha's area of responsibility overlaps the EMBA.</p>	Yes
Shire of Ashburton	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Onslow, Pannawonica, Paraburdoo and Tom Price.	<p>Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d).</p> <p>The Shire of Ashburton's area of responsibility overlaps the EMBA.</p>	Yes
Town of Port Hedland	Local government governed by the Local Government Act 1995 representing the suburbs and	<p>Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d).</p> <p>The Town of Port Hedland's area of responsibility overlaps the EMBA.</p>	Yes

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	localities of Cooke Point, Port Hedland, Pretty Pool, Redbank, South Hedland, Wedgefield and Yandeyarra.		
Shire of Carnarvon	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Babbage Island, Brockman, Browns Range, Carnarvon, Coral Bay, East Carnarvon, Greys Plain, Ingaarda, Kingsford, Morgantown, North Plantations, South Carnarvon, South Plantations.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The Shire of Carnarvon's area of responsibility overlaps the EMBA.	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 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	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

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<p>Gascoyne Development Commission                  Gun Marine Services                  Ningaloo Lodge                  Offshore Unlimited                  Shire of Exmouth                  BHP Petroleum                  Santos                  Community Member</p>			
<p>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                  Pilbara Development Commission                  Dampier Community Association                  City of Karratha                  Karratha &amp; Districts Chamber of Commerce and Industry                  Horizon Power                  Murujuga Aboriginal Corporation (MAC)*                  Department of Local Government, Sport and Cultural Industries</p>	<p>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.</p>	<p>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. Woodside, at its discretion, chose to assess the KLG as a relevant person under regulation 11 A 1 (e).</p>	<p>Yes</p>

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*MAC was consulted directly as described above.			
Onslow Chamber of Commerce and Industry	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Onslow and surrounding areas.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The Onslow Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Carnarvon Chamber of Commerce and Industry	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Carnarvon and surrounding areas.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The Carnarvon Chamber of Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
Port Hedland Chamber of Commerce and Industry	Independent not-for-profit organisation responsible for promoting the interests of its members in the business community in the town of Port Hedland and surrounding areas.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The Port Hedland Commerce and Industry's interests have the potential to be impacted by the proposed activities.	Yes
<b>Other non-government groups or organisations</b>			
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 'Additional persons' and 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that 350A's public website material demonstrates and feedback 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

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Australasian Centre for Corporate Responsibility (ACCR)	Non-government organisation	<p>Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11 A 1 (d) to determine ACCR's relevance for the proposed activity.</p> <p>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)</p> <p>Woodside chose to contact ACCR at its discretion in line with Section 5.3.4</p>	No
Australian Conservation Foundation (ACF)	Non-government organisation	<p>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 'Additional persons' and 'Other non-government groups or organisations' under regulation 11A(1)(d).</p> <p>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).</p>	Yes
Australian Marine Conservation Society (AMCS)	Non-government organisation	<p>Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 1 (d) to determine AMCS's relevance for the proposed activity.</p> <p>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).</p>	Yes
Climate Council	Non-government organisation	<p>Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 1 (d) to determine Climate Council's relevance for the proposed activity.</p> <p>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).</p> <p>Woodside chose to contact Climate Council at its discretion in line with Section 5.3.4.</p>	No
Conservation Council of Western Australia (CCWA)	Non-government organisation	<p>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 'Additional persons' and 'Other non-government groups or organisations' under regulation 11A(1)(d).</p> <p>Woodside has assessed that CCWA's public website material and feedback demonstrates an interest with the potential risks and impacts associated with</p>	Yes

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		planned activities in accordance with the intended outcome of consultation (as set out in Section 5.2).	
Doctors for the Environment Australia (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. Woodside has applied its methodology for 'Additional persons' and '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).	No
Extinction Rebellion WA (XRWA)	Non-government organisation	Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 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 'Additional persons' and '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).	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 'Additional persons' and '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
International Fund for Animal Welfare (IFAW)	Non-government organisation	Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 1 (d) to determine IFAW's relevance for the proposed activity.	No

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		<p>Woodside has assessed that IFAWA'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).</p> <p>Woodside chose to contact IFAW at its discretion in line with Section 5.3.4.</p>	
Lock The Gate Alliance (LTGA)	Non-government organisation	<p>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 'Additional persons' and 'Other non-government groups or organisations' under regulation 11A(1)(d).</p> <p>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).</p>	No
Market Forces	Non-government organisation	<p>Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 1 (d) to determine Market Force's relevance for the proposed activity.</p> <p>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).</p> <p>Woodside chose to contact Market Force at its discretion in line with Section 5.3.4.</p>	No
Say No to Scarborough Gas (SNTSG)	Non-government organisation	<p>Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 1 (d) to determine SNTSG's relevance for the proposed activity.</p> <p>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).</p>	Yes
Sea Shepherd Australia (SSA)	Non-government organisation	<p>Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 1 (d) to determine SSA's relevance for the proposed activity.</p> <p>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).</p>	Yes
The Wilderness Society (TWS)	Non-government organisation	<p>Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 1 (d) to determine TWS's relevance for the proposed activity.</p>	Yes

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		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).	
World Wildlife Fund (WWF) Australia	Non-government organisation	Woodside has applied its methodology for 'Additional persons' and 'Other non-government groups or organisations' under regulation 11 A 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
<b>Research institutes and local conservation groups or organisations</b>			
University of Western Australia (UWA)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11 A 1 (d) to determine UWA's relevance for the proposed activity.  There is known research being undertaken by the UWA that intersects within the EMBA.	Yes
Western Australian Marine Science Institution (WAMSI)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11 A 1 (d) to determine WAMSI's relevance for the proposed activity.  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.	No
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11 A 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 11 A 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.	No

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		Woodside chose to contact AIMS at its discretion in line with Section 5.3.4.	
Cape Conservation Group	Local conservation group focused on protecting the terrestrial and marine environment of the North West Cape	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11 A 1 (d) to determine CCG's relevance for the proposed activity. CCG's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps North West Cape.	Yes
Protect Ningaloo	Local conservation group focused on protecting the Exmouth Gulf and Ningaloo Reef and Cape Range	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11 A 1 (d) to determine CCG's relevance for the proposed activity. Protect Ningaloo's conservation activities have the potential to intersect with the EMBA as the EMBA overlaps North West Cape and Ningaloo Reef.	Yes
<b>Other</b>			
Save Our Songlines (SOS)	Representatives of Non-Government Organisation Save Our Songlines and/ or individuals [REDACTED] and/ or [REDACTED]	Woodside has applied its methodology for 'Traditional Custodians and nominated representative corporations' and 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine Save Our Songlines (SOS) and/ or [REDACTED] and/ or [REDACTED] 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. Woodside has assessed that SOS and/ or [REDACTED] and/ or [REDACTED] feedback demonstrates an interest with the proposed activity.	Yes
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

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## 5.9 Consultation Activities and Additional Engagement for the Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Woodside has been conducting extensive consultation on the Scarborough Project since February 2018, when preliminary consultation for the Scarborough OPP commenced with interested and affected stakeholders.

Consultation aims to be inclusive, transparent, voluntary, respectful and two-way. Consultation for this Environment Plan was undertaken via advertising, emails, letters, information sheets, presentations, information sessions, phone calls and meetings.

- Woodside advertised the planned activities proposed for this EP in the national, state and relevant local newspapers including The Australian, The West Australian, Pilbara News (19 October 2022) and The Australian, The West Australian, Pilbara News, Midwest Times, North West Telegraph (18 January 2023) and Geraldton Times (20 January 2023) (see Appendix F, reference 6.1). Regional newspapers do not require subscription and are available and in some cases delivered directly to households. All communities within or adjacent to the EMBA had access to this information via this media. No direct comments or feedback were received from the advertisements.
- A Consultation Information Sheet was provided to relevant persons and persons Woodside chose to contact (see Section 5.3.4), 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).

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 EMBA's for this EP and additional information relating to mitigation and managements measures for this EP (Appendix F, reference 2.1).

- Since the commencement of the initial consultation period (August 2021), the Stakeholder Consultation Information Sheet (Appendix F, reference 1.1) has been available on the Woodside website and the activity update Consultation Information Sheet since January 2023 (Appendix F, reference 2.1). The Woodside Consultation Information Sheets include a toll-free 1800 phone number and Woodside's feedback email address ([feedback@woodside.com.au](mailto:feedback@woodside.com.au)).
- Additional targeted information was provided to relevant marine users including AHO and AMSA – Marine Safety (Appendix F, reference 1.4, 1.4.1, 1.4.2). The targeted information included maps and additional information relevant to the specific category of persons. The relevant persons had a 30-day period in which to provide feedback.
- Where appropriate, Woodside conducted phone calls and meetings with relevant persons.
- Where appropriate, targeted follow-up emails were sent to relevant persons who had not provided a response prior to the close of the target feedback period.
- While ensuring that the particulars of each activity (including description, planned and unplanned impacts and controls) are adequately covered, Woodside conducts consultation with relevant persons on all Scarborough Project activities for which they are relevant in a combined manner. This achieves efficiency for Woodside and the relevant person, and ensures that all activities are understood in their broader context.
- 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).
- Consultation activities undertaken with relevant persons are summarised at Appendix F, Table 1.

- Engagement undertaken with persons or organisations Woodside assessed as not relevant but chose to contact (see Section 5.3.4 or self-identified and Woodside assessed as not relevant are summarised at Appendix F, Table 2).
- From 3 May 2023, Woodside commenced a geotargeted sponsored social media campaign (Appendix F, reference 6.2) to various local government authorities that are within or coastally adjacent to the EMBA for the proposed activities. The campaign provided the opportunity for individuals (including self-identified traditional custodians) who may be interested in Woodside's activities to participate in consultation. The campaign also advised persons or organisations on how they can find out about Woodside's proposed activities by visiting Woodside's website.
- Community information sessions
- Community Information Sessions were held in Roebourne on 5, 10, 19 and 24 May, 22 June, and 19 July 2023; in Exmouth on 17 June 2023; and Broome, Derby and Kununurra on 12, 13 and 15 June 2023 respectively. Ahead of the events, Woodside advertised the sessions via the means below which provided the opportunity for local individuals to become aware of the event and have access to experts and information about the activity. The methods used to promote these consultation opportunities were developed with input from Indigenous representatives and were adapted to incorporate culturally appropriate and accessible language to encourage engagement and understanding of Woodside's proposed activities:
  - Advertising in the Broome Advertiser and Kimberley Echo on 1 and 8 June 2023 (Appendix F, reference 6.3.1) and for the Karratha Community Session in the Pilbara News on 28 June 2023 (Appendix F, reference 6.4.3).
  - From 8 June 2023, Woodside commenced a geotargeted social media campaign along the coastline from Geraldton to Derby (Appendix F, reference 6.2) advertising the community information sessions. A Facebook information campaign was targeted in Exmouth to ensure it reached communities where the Exmouth Consultation Information Session was planned to be held. (Appendix F, reference 6.5.1) A Karratha Community Information Session was advertised via a Facebook post on 28 June 2023 (Appendix F, reference 6.4.3) and a geotargeted social media campaign from 16 June to 29 June 2023 (Appendix F, reference 6.4.3).
  - Directly contacting local Traditional Custodian groups to invite representatives to attend the Community Information Sessions and providing the event information (see Appendix F, Table 1).
  - Advertising in Roebourne with posters on four community boards and dropped posters to community locations; and put information and posters on the Roebourne Community Calendar (Appendix F, reference 6.4.1 and 6.4.2).
  - Representatives from Woodside, including project and environment personnel equipped to answer technical questions, attended the event. Copies of the Consultation Information Sheets and bespoke targeted Summary Consultation Information Sheets were available to attendees. Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions and provide their feedback.
- Community Information Sessions were held in Karratha on 28 and 29 June 2023. Woodside advertised the sessions (see below) providing the opportunity for individuals to become aware of the event and have access to information as well as people who can answer questions and provide information about the activity. The methods used to promote these consultation opportunities were developed with input from Indigenous representatives and were adapted to incorporate culturally appropriate and accessible language to encourage engagement and understanding of Woodside's proposed activities:

- Ahead of the 28 June 2023 event, a story was posted on Woodside’s Facebook page (Appendix F, reference 6.4.3) sharing details of its shopping centre stand where Consultation Information Sheets regarding planned and proposed activities were available, including the activities proposed under this Environment Plan.
- Ahead of the 29 June 2023 event, the Community Information Session was advertised in the Pilbara News ), via a geotargeted social media campaign in Karratha and surrounding areas and by posting the event details on Woodside’s Facebook page (Appendix F, reference 6.4.3).
- Representatives from Woodside, including project and environment personnel equipped to answer technical questions, attended the event. Copies of the Consultation Information Sheets and bespoke targeted Summary Consultation Information Sheets were available to attendees. Community members were able to engage with Woodside representatives to understand the proposed activity and how it may affect them, ask questions and provide their feedback.
- Woodside had a stand at the annual FeNaCING Festival in Karratha on 5 and 6 August 2023. Members of Woodside’s Corporate Affairs and Operations teams actively engaged with the community to discuss proposed Environment Plan activities. Consultation Information Sheets for a number of Woodside Environment Plans including this Environment Plan were available. Approximately 2,000 people visited the Woodside stand (based on the number of completed consultation forms and questionnaires). This consultation opportunity was promoted in the Pilbara News on 2 August 2023, and a story appeared on the Woodside North West Facebook page on 2 August 2023. (Appendix F, reference 6.4.4).
- Woodside had a stand at the Passion of the Pilbara festival in Onslow on 18 August 2023. Members of Woodside’s Corporate Affairs team actively engaged with the community to discuss proposed Environment Plan activities. Consultation Information Sheets for a number of Environment Plans including this Environment Plan were available. Approximately 100 people visited the Woodside stand.
  - This consultation opportunity was promoted in a story on the Woodside North West Facebook page on 17 August 2023. (Appendix F, reference 6.4.5).
- Woodside consulted the Karratha, Port Hedland and Roebourne communities on Environment Plan activities during 18–20 September 2023. Members of Woodside’s Corporate Affairs, First Nations, Environment and Scarborough Project teams actively engaged the community to discuss proposed Environment Plans, including the Scarborough and Browse projects.
  - 18 September 2023: Karratha Shopping Centre 8am–12pm; Red Earth Arts Precinct 3–6pm. Estimated number of people consulted: 20;
  - 19 September 2023: Port Hedland, South Hedland Square 10am–5pm. Estimated number of people consulted: 20;
  - 20 September 2023: Roebourne, Woodside Office 10am–4pm. Estimated number of people consulted: no attendance at the session due to Sorry Business and multiple Aboriginal corporation meetings which were unknown at the time of scheduling/planning engagements;
- These consultation opportunities were promoted in the Pilbara News on 13 September 2023, and via Facebook and Instagram social media campaigns from 6 to 16 September 2023. (Appendix F, reference 6.4.6).



### 5.9.1 Traditional Custodian Specific Consultation

In addition to the approaches above including community information sessions, additional activities were undertaken with relevant Traditional Custodians, which were specifically designed to provide for effective engagement with Traditional Custodians and so that information was provided in a form that was readily accessible and appropriate (Section 5.5). Consultation undertaken specifically with Traditional Custodians for this Environment Plan includes:

- Direct engagement with nominated representative corporations via the contact listed on the ORIC website, requesting advice on how they would like to be engaged and asking whether other members and/or individuals should be consulted. This has resulted in:
  - Meetings with directors, elders and any nominated representatives, on country or in Perth;
  - Requests and offers of resourcing to enable and support consultation;
  - Exchange of written feedback and correspondence;
  - A Summary Consultation Information Sheet, developed and reviewed by Indigenous representatives in collaboration with technical experts to ensure content is appropriate to the intended recipients, was provided to relevant Traditional Custodian groups (Appendix F, reference 2.1.1). and phone calls to provide context to the consultation made.
- Ongoing efforts were made to engage and develop relationships with these bodies via a variety of means such as email, phone calls, alternative contacts, texts, social media and in some cases physical visits.
- Consultation meetings with attendees decided by Traditional Custodian groups, supported by senior Woodside representatives, subject matter experts, First Nations Relations advisers with skills and experience in community engagement. Meetings are developed through a two-way consultation process to ensure effective information sharing via:
  - Mutually agreed agenda avoiding time pressure;
  - Encouraging Traditional Custodian attendees to control the pace of the meeting and pause at any time to ask questions, seek clarification or provide feedback;
  - Visual aids such as posters, presentations, simplified technical videos and real-world pictures and footage;
  - Emphasis on potential planned and unplanned risks and impacts of the activity;
  - Ample opportunity for questions and feedback;
  - Discussion about ongoing relationship development and opportunities;
  - Distribution of hard-copy Consultation Information Sheets (Appendix F, reference 2.1) and Summary Consultation Information Sheets (Appendix F, reference 2.1.1.)
  - Meeting all costs such as sitting fees, travel, legal support and executive support and other support required.
- Woodside has a geotargeted sponsored social media campaign (Appendix F, reference 6.2) to various communities that are coastally adjacent to the EMBA for the proposed activities.
  - The wide-reaching campaign brought the proposed activity to the attention of persons who may be interested and advised persons or organisations how they can find out about Woodside's proposed activities by visiting Woodside's website, which details the intent of consultation with relevant persons under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth). The reach of this campaign is shown in Appendix F, reference 6.2 providing the opportunity to consult via over 139,000 views to date across various regions.

- These social media posts were developed with input from Indigenous representatives. Social media is a highly effective means to engage Indigenous audiences as outlined in Indigenous Digital Life (Professor Carlson, 2021). Advertisements used language and information appropriate to Indigenous audiences. Feedback from community engagements indicates a high level of penetration for this technique.

Woodside has employed a diverse range of techniques to allow relevant persons to become aware of the proposed activity and how it may affect their functions activities or interests, and understand their ability to provide feedback. The combination of engagement meetings, traditional print media, social media and face-to face community interaction was designed with input from Indigenous representatives and adapted to the audience, so that it provides a wide-ranging opportunity to consult.

## 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 6 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 Operational Area.

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.
- Unplanned events (accidents, incidents or emergency situations) with an environmental consequence, termed risks.

Within these categories, impact and safety 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 15 sources of environmental impacts and risks. A summary of the ENVID is provided in Table 6-3.

The activity specific ENVID workshop was conducted on 22 June 2021. Attendees included Woodside environment advisers and engineers, environmental scientists, hydrocarbon spill advisers, trunkline engineer and manager, and seabed intervention manager. Representatives from the seabed intervention and trunkline installation contractors were also present. 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 indicate 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 0.

#### 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 (Figure 6-1).

Figure 6-1 shows proposed sequence of seabed intervention and trunkline installation activities and where these will occur along the Trunkline route (Kilometre Point on y-axis) over an indicative time (x-axis). The key can be used to see what vessel(s) are associated with each activity. Below the x-axis, humpback whale and pygmy blue whale migration time periods have been added, including the KP range of the migration BIAs; to help illustrate overlaps between these seasons and the Petroleum Activities Program. The figure shows that the primary opportunity for concurrent activities occurs in

the permit area WA-61-L where aspects of the Petroleum Activities Program will potentially be carried out at the same time as Scarborough drilling and completions activities. These overlaps are detailed in Table 6-1.

Shallow Water Lay Barge activities (such as anchoring) may extend into Commonwealth Waters, however there is no planned concurrent activities between the SWLB and PV due to temporal separation.

Cumulative impacts between Scarborough project activities are being addressed sequentially, meaning future Scarborough Environment Plans will assess temporal/spatial overlap with the Petroleum Activity Programs of previously submitted EP's.

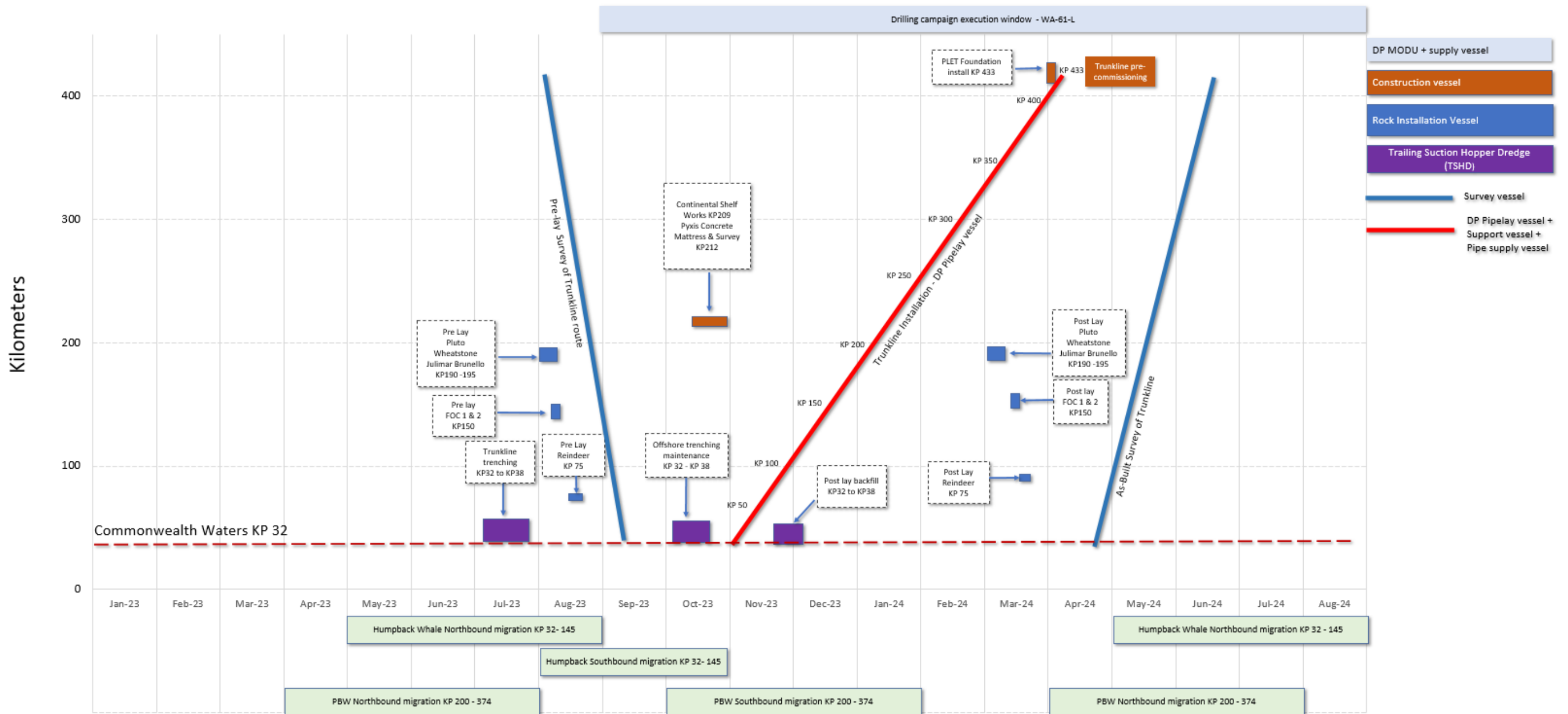
In this EP, cumulative impact assessment has been carried out for:

- Routine acoustic emissions;
- Physical Presence (Unplanned) – Interaction with Marine Fauna

In this EP it was determined that cumulative impact from activities within the Petroleum Activities Program, as well as between the Petroleum Activities Program and D&C activities, was not credible for light emissions and vessel discharges.

Other facilities located in proximity to the Operational Area were identified within Section 4.9.6. While there may be spatial overlap with a number of pipelines and cables, activities cannot occur concurrently and therefore, no cumulative risks or impacts will credibly occur.

During EP consultation, Chevron advised Woodside of its intent to carry out a 4D Marine Seismic Survey (4D MSS) subject to approvals, in the vicinity of the Wheatstone facility. Timing of the survey is currently planned for Q1 2024 and may occur at the same time as Trunkline installation as the PV moves through the Montebello MUZ and lays westward adjacent to the Wheatstone infrastructure. Due to underwater noise propagation from the MSS, there is potential for cumulative noise impact, and this has been assessed in Section 6.7.6.



**Figure 6-1: Scarborough SI & TI Activities indicative timing and locations along the Trunkline route**

Schedule may be subject to future change due to vessel availability, weather, operational constraints and project sequencing.

Note 1 – KPs referenced inside cetacean migration boxes relate to migration BIA

Note 2 – Diagram is for illustrative purposes – to show spatial and temporal separation between activities, resulting in limited concurrent / cumulative impact potential. Activities will not start until EP is accepted and hence earliest commencement date shown on here will move pending EP acceptance.

**Table 6-1: Concurrent operations, including both activities within this EP Petroleum Activities Program and the Scarborough D&C activities**

Concurrent Activities	Approx. Timing & Location	Vessels	Cumulative impact not credible	Cumulative impact potential
Pre-lay survey & Drilling & Completions*	Approx. Sep 2023 ~ 4 days** PLET ~KP 433	Survey vessel DP MODU + supply vessel	Light – not credible as no sensitive receptors present (Section 6.7.4) Vessel strike – not credible due to limited presence of cetaceans and low vessel speeds (Section 6.8.7)	Noise – see assessment in Section 6.7.6
PLET foundation installation & Trunkline Installation & Drilling and Completions*	April 2024 – 2weeks PLET ~KP 433	Construction vessel DP Pipelay Vessel + pipe supply vessel + support vessel DP MODU + supply vessel	Light – not credible as no sensitive receptors present (Section 6.7.4) Vessel strike – not credible due to limited presence of cetaceans and low vessel speeds (Section 6.8.7)	Noise – see assessment in Section 6.7.6
Pre-commissioning & Drilling and Completions*	April / May 2024 – 1 – 3 months depending on pre-commissioning methodology dry vs. wet PLET ~KP 433	Construction vessel DP MODU + supply vessel	Light – not credible as no sensitive receptors present (Section 6.7.4) Vessel strike – not credible due to limited presence of cetaceans and low vessel speeds (Section 6.8.7)	Noise – see assessment in Section 6.7.6
Post-lay survey & Drilling and Completions*	Approx. June 2024 ~ 4 days** PLET ~KP 433	Survey vessel DP MODU + supply vessel	Light – not credible as no sensitive receptors present (Section 6.7.4) Vessel strike – not credible due to limited presence of cetaceans and low vessel speeds (Section 6.8.7)	Noise – see assessment in Section 6.7.6

\*Drilling & Completions activities covered under the Scarborough Drilling and Completions Environment Plan. A x-mas tree installation vessel may also be present during the D&C program (if x-mas trees are not installed from the MODU). However, as the vessel and MODU cannot be over the same well at the same time, the worst case scenario is representative.

\*\* Duration of concurrent activities overlap only, not indicative of timing of the whole activity

### 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 Section 2.2.3 and Section 2.2.4 as part of the acceptability and ALARP justification process.

During consultation, a summary of the controls adopted to manage the impacts and risks from the activity is included in the Consultation Information Sheet (Appendix F, 1.1) which is provided directly to relevant persons and available on the Woodside website.

In addition, during face-to-face consultation with Traditional Custodians, the particular controls adopted to manage interests raised are typically discussed by appropriate SMEs at the meeting to seek feedback. These controls may also be jointly adopted to protect the ecological value of a receptor. If additional controls are considered, to manage the risk to identified cultural values, these are discussed with the relevant persons who have raised the value.

Controls which have been adopted to manage the risk to a cultural value identified from literature or which are adaptive in nature may not have not been routinely tested during consultation with traditional custodians, unless the values has been identified by the relevant person themselves. It is not considered appropriate to broadly canvass Traditional Custodian relevant persons to validate cultural values identified from literature (not raised by the relevant person themselves) or associated controls. Instead, Woodside's in-house heritage and First Nations experts have been involved in developing and screening such controls. 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 7.17.4).

The Scarborough OPP identified the impacts and risks associated with the proposed development and defined suitable high-level Environmental Performance Outcomes. The Scarborough 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 also summarized 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 (Commonwealth of Australia, 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
<b>Planned Activities</b>			
Section 6.7.1 Physical Presence – Interactions with Other Marine Users	<b>EPO 1</b> Undertake the Petroleum Activities Program in a manner that will not have a substantial adverse effect on the sustainability of commercial fishing.	<b>EPO 5.1</b>	The EPOs adopted in the EP for the interference with other users are consistent with the EPOs in the Scarborough OPP.
	<b>EPO 2</b> 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.	<b>EPO 5.2</b>	
Section 6.7.2 Physical Presence – Seabed Disturbance (Dredging, Spoil Disposal and Backfill)	<b>EPO 3</b> 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.	<b>EPO 6.1; EPO 7.1 ; EPO 8.1; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2</b>	The EPOs adopted in the EP for seabed disturbance are consistent with the EPOs in the Scarborough OPP.
	<b>EPO 4</b> Undertake activities within the borrow ground to not harm or cause destruction to the sea floor habitats (including significant areas of sponge habitat) of the Dampier AMP Habitat Protection Zone.	<b>EPO 6.2</b>	
	<b>EPO 5</b> Undertake the Petroleum Activities Program in a manner that ensures no displacement of marine turtles from habitat critical during nesting and internesting periods and marine turtles' biologically important behaviour can continue in biologically important areas.	<b>EPO 1.5; EPO 6.6.</b> <i>(updated to align with Recovery Plan)</i>	
	<b>EPO 6</b> 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.	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2.</b>	

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Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	<p><b>EPO 27</b> No detectable net reduction of live coral cover at coral impact monitoring locations attributable to the Petroleum Activities Program</p>	<b>New EPO</b>	
	<p><b>EPO 31</b> No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit<sup>13</sup>.</p>	<b>New EPO</b>	New EPO developed for this EP.
Section 6.7.3 Seabed Disturbance (Intervention and Trunkline Installation)	<p><b>EPO 3</b> 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.</p>	<b>EPO 6.1; EPO 7.1 ; EPO 8.1; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2.</b>	The EPOs adopted in the EP for seabed disturbance are consistent with the EPOs in the Scarborough OPP.
	<p><b>EPO 5</b> Undertake the Petroleum Activities Program in a manner that ensures no displacement of marine turtles from habitat critical during nesting and internesting periods and marine turtles' biologically important behaviour can continue in biologically important areas.</p>	<b>EPO 1.5; EPO 6.6</b>	
	<p><b>EPO 6</b> 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.</p>	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2.</b>	
	<p><b>EPO 7</b> Seabed disturbance from trunkline installation within the Montebello Marine Park will be limited to less than 0.07% of the total park area.</p>	<b>EPO 6.5</b>	
	<p><b>EPO 8</b> Undertake Scarborough Trunkline Installation within the Montebello AMP in a manner that will not be inconsistent with the objective of the multiple use zone.</p>	<b>EPO 6.7 EPO 6.3</b>	

<sup>13</sup> Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	<p><b>EPO 9</b> Changes to water quality in the Montebello Marine Park as a result of the trunkline installation will not be inconsistent with the objective of the multiple use zone.</p>		
	<p><b>EPO 31</b> No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit<sup>14</sup>.</p>	<b>New EPO</b>	New EPO developed for the SITI EP.
Section 6.7.4 Routine Light Emissions from Project Vessels	<p><b>EPO 5</b> Undertake the Petroleum Activities Program in a manner that ensures no displacement of marine turtles from habitat critical during nesting and internesting periods and marine turtles' biologically important behaviour can continue in biologically important areas.</p>	<b>EPO 1.5; EPO 6.6.</b>	The EPOs adopted in the EP for routine light emissions are consistent with the EPOs in the Scarborough OPP.
	<p><b>EPO 6</b> 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.</p>	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2.</b>	
	<p><b>EPO 10</b> 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.</p>	<b>EPO 1.2; EPO 15.3</b>	
	<p><b>EPO 11</b> 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.</p>	<b>EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5</b>	
	<p><b>EPO 12</b> 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.</p>	<b>EPO 1.3; EPO 10.5; EPO 15.8</b>	

<sup>14</sup> Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Section 6.7.5 Routine Atmospheric and Greenhouse Gas Emissions	<b>EPO 13</b> 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.	<b>EPO 2.1.</b>	<b>EPO 14 is a new EPO – OPP EPO 21</b> relating to Atmospheric and GHG emissions has been updated to be inclusive of all emissions relevant to this Petroleum Activities Program.
	<b>EPO 14</b> Optimise efficiencies in air emissions and reduce GHG emissions to ALARP and acceptable levels	<b>New EPO</b>	
Section 6.7.6 Routine Acoustic Emissions	<b>EPO 6</b> 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.	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2.</b>	The EPOs adopted in the EP for routine acoustic emissions are consistent with the EPOs in the Scarborough OPP.
	<b>EPO 11</b> 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.	<b>EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5.</b>	
	<b>EPO 15</b> Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fish, marine mammals, marine reptiles, or the spatial distribution of a population.	<b>EPO 4.2; EPO 15.7; EPO 18.4</b>	
	<b>EPO 29</b> Undertake the Petroleum Activities Program in a manner that prevents injury to blue whales or biologically significant behavioural disturbance.	<b>New EPO</b>	
Section 6.7.7 Routine and Non-Routine Discharges: Vessels and Seabed Intervention	<b>EPO 3</b> 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.	<b>EPO 6.1; EPO 7.1 ; EPO 8.1; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2</b>	The EPO adopted in the EP for project vessel discharges is consistent with the EPOs in the Scarborough OPP.

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Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Section 6.7.8 Routine and Non-Routine Discharges: Trunkline Installation Pre-commissioning	<b>EPO 3</b> 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.	<b>EPO 6.1; EPO 7.1 ; EPO 8.1 ; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2</b>	The EPOs adopted in the EP for the Trunkline Pre-commissioning discharges are consistent with the EPOs in the Scarborough OPP.
	<b>EPO 6</b> 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.	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2</b>	
	<b>EPO 16</b> 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.	<b>EPO 10.2; EPO 11.3; EPO 12.3; EPO 13.3</b>	
	<b>EPO 17</b> 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.	<b>EPO 10.8; EPO 11.6; EPO 12.5; EPO 13.6; EPO 16.3</b>	
	<b>EPO 18</b> Undertake the Petroleum Activities Program in a manner that prevents substantial change in sediment quality, that may adversely impact on biodiversity, ecological integrity, social amenity or human health.	<b>EPO 11.2; EPO 12.2</b>	
	<b>EPO 8</b> Undertake Scarborough Trunkline Installation within the Montebello AMP in a manner that will not be inconsistent with the objective of the multiple use zone	<b>EPO 6.7</b>	
	<b>EPO 9</b> Changes to water quality in the Montebello Marine Park as a result of the trunkline installation will not be inconsistent with the objective of the multiple use zone.	<b>EPO 6.3</b>	

**Unplanned Activities**

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Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Section 6.8.2 Unplanned Hydrocarbon Release: Vessel Collision	<b>EPO 19</b> No release of hydrocarbons to the marine environment due to a vessel collision associated with the Petroleum Activities Program.	<b>EPO 19.1</b>	The EPO adopted in the EP for an unplanned hydrocarbon release from a vessel collision are consistent with the EPOs in the Scarborough OPP.
Section 6.8.3 Unplanned Hydrocarbon Release: Bunkering	<b>EPO 20</b> 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.	<b>New EPO</b>	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 – Deck and Subsea Spills	<b>EPO 3</b> 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.	<b>EPO 6.1; EPO 7.1 ; EPO 8.1 ; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2:</b>	The EPO adopted in the EP for an unplanned discharge from deck and subsea spills is consistent with the EPOs in the Scarborough OPP.
Section 6.8.5 Unplanned Discharge: Hazardous and Non – Hazardous Solid Waste / Equipment	<b>EPO 3</b> 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.	<b>EPO 6.1; EPO 7.1 ; EPO 8.1 ; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2</b>	The EPOs adopted in the EP for an unplanned discharge of hazardous and non-hazardous solid waste / equipment are consistent with the EPOs in the Scarborough OPP.
	<b>EPO 6</b> 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.	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2</b>	

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Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	<p><b>EPO 10</b> 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.</p>	<p><b>EPO 1.2; EPO 15.3</b></p>	
	<p><b>EPO 11</b> 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.</p>	<p><b>EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5</b></p>	
	<p><b>EPO 15</b> Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fish, marine mammals, marine reptiles, or the spatial distribution of a population.</p>	<p><b>EPO 4.2; EPO 15.7; EPO 18.4</b></p>	
	<p><b>EPO 12</b> 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.</p>	<p><b>EPO 1.3; EPO 10.5; EPO 15.8</b></p>	
	<p><b>EPO 21</b> 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.</p>	<p><b>EPO 15.1</b></p>	
	<p><b>EPO 22</b> 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.</p>	<p><b>EPO 10.4; EPO 15.4</b></p>	
	<p><b>EPO 23</b> 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.</p>	<p><b>EPO 10.7; EPO 15.5; EPO 18.3</b></p>	

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Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Section 6.8.6 Physical Presence (Unplanned): Seabed Disturbance	<b>EPO 6</b> 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.	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2</b>	The EPOs adopted in the EP for unplanned seabed disturbance are consistent with the EPOs in the Scarborough OPP.
	<b>EPO 17</b> 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.	<b>EPO 10.8; EPO 11.6; EPO 12.5; EPO 13.6; EPO 16.3</b>	
	<b>EPO 24</b> Undertake the Petroleum Activities Program in a manner which prevents unplanned seabed disturbance.	<b>EPO 16.1</b>	
Section 6.8.7 Physical Presence (Unplanned): Collision with Marine Fauna	<b>EPO 6</b> 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.	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2</b>	The EPOs adopted in the EP for the unplanned collision with marine fauna are consistent with the EPOs in the Scarborough OPP.
	<b>EPO 10</b> 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.	<b>EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5</b>	
	<b>EPO 15</b> Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fish, marine mammals, marine reptiles, or the spatial distribution of a population.	<b>EPO 4.2; EPO 15.7; EPO 18.4</b>	
	<b>EPO 23</b> 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.	<b>EPO 10.7; EPO 15.5; EPO 18.3</b>	

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Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	<p><b>EPO 25</b> Undertake the Petroleum Activities Program in a manner which prevents a vessel strike with protected marine fauna during project activities.</p>	<b>EPO 18.1</b>	
Section 6.8.8 Physical Presence (Unplanned): Invasive Marine Species	<p><b>EPO 6</b> 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.</p>	<b>EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2</b>	The EPOs adopted in the EP for the unplanned introduction of Invasive Marine Species are consistent with the EPOs in the Scarborough OPP.
	<p><b>EPO 26</b> Undertake the Petroleum Activities Program in a manner which prevents a known or potential pest species (IMS) becoming established.</p>	<b>EPO 17.1, EPO 17.3, EPO 17.4</b>	
Section 6.10 Cultural Features and Heritage Values	<p><b>EPO 28</b> No impact to cultural features and heritage values, as stated in Table 4-27, greater than a consequence level of F<sup>15</sup> from the Petroleum Activities Program</p>	<b>New EPO</b>	New 'Cultural Features and Heritage Values' EPO's have been developed for this EP to ensure reduction in impact potential to ALARP and Acceptable levels.
	<p><b>EPO 30</b> Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values.</p>	<b>New EPO</b>	
	<p><b>EPO 31</b> No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit<sup>16</sup>.</p>	<b>New EPO</b>	
	<p><b>EPO 32</b> New cultural values identified through the Program and supporting studies will be managed to ALARP and an Acceptable level of impact</p>	<b>New EPO</b>	

<sup>15</sup> Defined as F – Negligible, no lasting effect (< 1 month) Localised impact not significant to areas /items of cultural significance

<sup>16</sup>Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

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## 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.

Scarborough OPP – Relevant Impact Assessment Section														
<i>&lt;Reference to section number in the Scarborough Project OPP&gt;</i>														
Context <Description of the context for the impact/risk. Regulation 13(1), 13(2) and 13(3)>														
<b>Relevant Activities</b> Source of Aspect – Section reference <i>Description of the Activity – Regulation 13(1)</i>				<b>Existing Environment</b> Relevant environment – Section reference <i>Description of the Environment – Regulations 13(2)(3)</i>				<b>Stakeholder consultation</b> Consultation – Section reference <i>Consultation – Regulation 11A</i>						
Impact/Risk Evaluation Summary														
Source of Impact/Risk Regulation 13(1)	Environmental Value Potentially Impacted Regulations 13(2)(3)						<b>Evaluation</b>							
	<i>Soil and Groundwater</i>	<i>Marine Sediment</i>	<i>Water Quality</i>	<i>Air Quality (inc. odour)</i>	<i>Ecosystems / Habitat</i>	<i>Species</i>	<i>Socio-economic</i>	<i>Decision Type</i>	<i>Impact/Consequence</i>	<i>Likelihood</i>	<i>Current Risk Rating</i>	<i>ALARP Tools</i>	<i>Acceptability</i>	<i>Outcome</i>
<i>Summary of source of risk/impact</i>														
Description of Source of Impact/Risk														
<i>Description of the identified impact/risk including sources or threats that may lead to the risk or identified event. Regulation 13(1).</i>														
Detailed Impact Assessment														
Assessment of Potential Impacts														
Receptor <u>Impact / risk</u> Assessment of potential impact <i>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).</i>														
Cumulative Impacts														
<i>Description of any cumulative impacts specific to the PAA (cumulative impact assessment of Scarborough project as a whole is covered in the Scarborough OPP)</i>														
Summary of Assessment Outcomes														
<b>Receptor</b>	<b>Impact</b>	<b>Receptor Sensitivity Level</b>		<b>Magnitude</b>		<b>Impact Significance Level / Risk Consequence</b>								

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<p><b>Overall Impact Significance Level/ Risk consequence:</b> 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 Scarborough OPP.</p>				

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>ALARP Tool Used – Section 2.3.4</b>				
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.
<p><b>ALARP Statement:</b> 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).</p>				

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

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO#</b> S: Specific performance which addresses the legislative and other controls that manage the activity and against which performance by Woodside in protecting the environment will be measured. M: Performance against the outcome will be measured by measuring implementation of the controls via the measurement criteria.</p>	<p><b>C#</b> Identified control adopted to ensure the impacts and risks are continuously reduced to ALARP. Regulation 13(5)(c).</p>	<p><b>PS#</b> Statement of the performance required of a control measure. Regulation 13(7)(a)</p>	<p><b>MC#</b> Measurement criteria for determining whether the outcomes and standards have been met. Regulation 13(7)(c)</p>

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<p>A: <i>Achievability/feasibility of the outcome demonstrated via discussion of feasibility of controls in ALARP demonstration. Controls are directly linked to the outcome.</i></p> <p>R: <i>The outcome will be relevant to the source of risk and the potentially impacted environmental value.</i></p> <p>T: <i>The outcome will state the timeframe during which the outcome will apply or by which it will be achieved.</i></p>			
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## 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 Operational Area 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 30 m and more than 5 km from nearest landfall (Dampier Archipelago). Consequently, risks associated with shallow/near-shore activities and risks of grounding were assessed as not credible.

### 6.5.2 Loss of Containment from Existing or Third Party Subsea Infrastructure

As described in Section 4.9.6, the Trunkline Project Area intersects several existing oil and gas pipelines, over which crossings will be installed, and the Trunkline subsequently laid (Table 3-8). A subsea loss of containment from a rupture of one of these pipelines within the Operational Area could occur in the event of a dropped object (i.e. pipe) during Trunkline installation, including accidental drop/loss of the catenary. While credible, the risk has been eliminated through the adoption of lifting restrictions, detailed in the controls of Section 6.8.6. Rupture of existing pipelines from dropped objects (including rock) during rock berm installation has been deemed not credible due to design characteristics such as rock sizing. Equally there is no credible risk of loss of containment during other vessel interactions with existing pipelines, such as survey activities due to the size of equipment being used (ROV) and nature of the activity.

Worst-case credible hydrocarbon release scenarios have been defined in relevant EPs including:

- Start-Up and Operations EP for the Wheatstone Project
- Reindeer Wellhead Platform and Offshore Pipeline Operations EP
- Julimar Operations EP
- Pluto Facility Operations EP

These EPs include subsea loss of containment resulting from a rupture of the pipeline/flowline where relevant. The existing EPs provide a description and assessment of impacts and risks as well as management controls and response capabilities for a pipeline/flowline rupture.

Commercial and technical agreements covering crossing design and construction are being developed with the relevant third parties, and third party asset representatives are involved in the Woodside process safety framework. The representatives help to identify risks and controls relevant for the Petroleum Activities Program, and change manage existing asset risk profiles accordingly.

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While it is credible for activities within the Petroleum Activities Program to cause damage to third party infrastructure, at the point of environmental consequence occurring the event falls in the scope of the relevant third party Environment Plan described above. Additional controls for operating the project vessels are provided throughout Sections 6.7 and 6.8 of this EP. In particular, controls are included for the prevention of dropped objects (Section 6.8.6).

## 6.6 Indirect Impacts

For the proposed Scarborough Seabed Intervention and Trunkline Installation activity, the potential 'indirect' environmental impacts and risks evaluated are those associated with mobilisation/demobilisation of project vessels to the Operational Area, which have been considered in the environmental impact assessment in Section 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 the 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 1.9.1.1 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	
<b>Planned Activities (Routine and Non-routine)</b>						
Physical Presence – Interaction with other marine users	6.7.1	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
Physical Presence – Seabed Disturbance (Dredging, Spoil Disposal and Backfill)	6.7.2	D	Environment – Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	-	-	Broadly Acceptable Has been shown to meet requirements listed in Section 2.3.5
Physical Presence – Seabed Disturbance (Intervention and Trunkline Installation)	6.7.3	D	Environment – Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	-	-	Broadly Acceptable Has been shown to meet requirements listed in Section 2.3.5
Routine Light Emissions from 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 Acoustic Emissions	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: Vessels and Seabed Intervention	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

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Aspect	EP Section	Risk Rating			Acceptability	
		Impact/Consequence	Potential Impact/Consequence Level	Likelihood		Current Risk Rating
Routine and Non-Routine Discharges – Trunkline installation and Pre-commissioning	6.7.8	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
<b>Unplanned Activities (Accidents, Incidents, Emergency Situations)</b>						
Unplanned Hydrocarbon Release: Vessel Collision	6.8.2	B	Environment – Major, long-term impact (10-50 years) on highly valued ecosystems, species, habitat or physical or biological attributes	1	M	Acceptable if ALARP Has been shown to meet requirements listed in Section 2.3.5
Unplanned Hydrocarbon Release: Bunkering	6.8.3	F	Environment – No lasting effect (less than one month); localised impact not significant to environmental receptors.	2	L	Broadly Acceptable Has been shown to meet requirements listed in Section 2.3.5
Unplanned Hydrocarbon Release: 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	Environment – No lasting effect (less than one month); localised impact not significant to environmental receptors.	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	Environment – Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	2	M	Broadly Acceptable Has been shown to meet requirements listed in Section 2.3.5
Physical Presence (Unplanned): Interaction with Marine Fauna	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.	1	L	Broadly Acceptable Has been shown to meet requirements listed in Section 2.3.5

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Aspect	EP Section	Risk Rating				Acceptability
		Impact/ Consequence	Potential Impact/Consequence Level	Likelihood	Current Risk Rating	
Physical Presence (Unplanned): Accidental Introduction and Establishment of Invasive Marine Species	6.8.8	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

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## 6.7 Planned Activities (Routine and Non-Routine)

### 6.7.1 Physical Presence – Interactions with Other Marine Users

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.1.5 – Displacement of Other Users														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7 Support Operations – Section 3.8 Seabed Intervention Activities – Section 3.9 Trunkline Installation Activities – Section 3.11				<b>Existing Environment</b> Socio-economic values – Section 4.9				<b>Stakeholder consultation</b> 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, ROV and helicopters interfering with or displacing third party vessels and/or aircraft (commercial fishing and commercial shipping, defence)							✓	A	E	-	-	LC S GP P	Broadly Acceptable	EPO 1, 2,
Description of Source of Impact/Risk														
<p><b>Vessel Operations</b></p> <p>Several vessel types will be required to complete the activities associated with the Petroleum Activities Program (refer to Section 3.9.2). Vessels will not usually anchor within the Operational Area during activities and instead maintain positioning using DP. The physical presence and movement of project vessels within the Operational Area has the potential to displace other marine users. Vessel physical presence and movement closer to the Dampier Archipelago and the Pilbara Port Authority Management Area is limited to activities along the trunkline route, the cycling of dredging and backfill between the Offshore Borrow Ground Project Area and Trunkline Project Area, and disposal of material in Spoil Ground 5A. These activities will be conducted over a period of months (refer to Section 3.6), and vessels will be continually moving. PV will move at a rate of around 3km per day. Further, all vessels will display navigational lighting and external lighting on a 24-hour basis, as required for safe operations. The Petroleum Activities Program 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 five-year period of the EP.</p> <p>Temporary exclusion 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.</p> <p><b>Exclusion zone around SWLB within anchor pattern</b></p> <p>SWLB activities such as anchoring may extend into Commonwealth waters, up to around KP 33, as it finishes laying the nearshore section of the Trunkline. The SWLB will be positioned using anchors and movement to lay the trunkline will be achieved by moving the anchors via the AHTs. Other third party vessels will be excluded from the moorings and</p>														
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anchor pattern for safety purposes. There is the potential for the SWLB anchor pattern exclusion zone to temporarily displace third party vessels. SWLB will implement an exclusion zone covering the mooring spread (nominally 1600 m) - this will be confirmed during Safety Case development and will be communicated to stakeholders during start of activity notifications.

**Helicopter Operations**

Helicopters will be used to transport personnel during the Petroleum Activities Program. Transport will occur on a regular basis, potentially with multiple flights per day (for larger vessels such as the PV) up to six days a week.

**Detailed Impact Assessment**

**Assessment of Potential Impacts**

**Commonwealth and State-managed Fisheries**

Five Commonwealth-managed fisheries and fourteen State-managed fisheries overlap with the Operational Area (refer to Section 4.9.2). Potential impacts to commercial fishers depends on the use of the area by fishers, and the temporal and spatial extent of the presence of vessels. Potential impacts to commercial fisheries include loss of commercial catch due to displacement from fishing grounds.

During the Petroleum Activities Program the presence of vessels will present a surface hazard to fishing vessels. Given the distance offshore, the majority of the Operational Area does not represent an area of high commercial fishing activity, however fishing activity is higher in nearshore waters, including KP 32 to KP 50. Activities in nearshore waters will take place over a short period, with pre-lay trenching and spoil disposal expected to take approximately two months and pipelay approximately six months along the full trunkline route (refer to Table 3-4). During this period, vessels will be continually moving and operating within a small spatial footprint. The presence of vessels and exclusion zones around the anchor spread for the SWLB (if required) will be limited to specific areas of the Operational Area at any one time. Therefore, fishing vessels will not be excluded from the entire Operational Area for the total duration of the Petroleum Activities Program. Furthermore, the Operational Area comprises a relatively small area when compared to the extent of the individual fishery boundaries. As such, displacement of commercial fisheries due to activities in the Operational Area are not expected to impact commercial fishing activities or the economic viability of the fisheries.

Considering the temporary and localised displacement potential for commercial fisheries due to the Petroleum Activities Program in the Operational Area, significant impacts to fishing activities are not expected. Any displacement of fishing activities will be temporary and have no lasting effect.

**Tourism and Recreation**

Tourism and recreation within the Operational Area is expected to be limited by the distance offshore and water depth. Some tourism may occur in the nearshore waters of the Trunkline Project Area, particularly in proximity to the Montebello Islands (refer to Section 4.9.4). However, impacts are expected to be limited by the short duration of the Petroleum Activities Program at this location, and the distance from these islands. Stakeholder consultation did not identify any key recreational fishing activity within the Operational Area. Potential impacts to tourism and recreational activities would likely be a minor interference (i.e. navigational hazard) and temporary, localised displacement/avoidance.

**Shipping**

Impact to commercial shipping is limited to the temporary presence of vessels throughout the Petroleum Activities Program. It is noted that a number of AMSA marine fairways intersect with the Operational Area (refer to Section 4.9.5). Dredging, material disposal and backfill activities, particularly in the shallower waters (KP 32 to KP 50 of the Operational Area) closer to the Dampier Archipelago and Pilbara Port Authority Management Area may cause temporary disruption to commercial shipping vessels. Interactions can be managed using well established maritime practices and, therefore, project activities are not expected to significantly disrupt shipping movements or port operations. Potential impacts to commercial shipping vessels are expected to include short-term displacement of vessels as they make slight course alterations to avoid the project vessels, which may result in minor delays or increased fuel use due to them having to take a less direct route. The presence of vessels and exclusion zones around them, including around the anchor spread for the SWLB (if required), will be limited to specific areas of the Operational Area at any one time, therefore resulting in a minor interference (i.e., navigational hazard) and localised displacement/avoidance by shipping.

**Industry**

A number of oil and gas facilities are located in proximity to the Operational Area, including a number of existing pipelines and fibre optic cables which intersect the Trunkline Project Area, requiring installation crossing supports (refer to Section 3.9.6). Rock berms and mattresses installed over existing infrastructure will be placed in a controlled manner, with positioning guidance from an ROV. The trunkline touchdown point will be continually monitored during installation over third party asset crossings to ensure correct instalment and no damage to infrastructure. Activities associated with the physical presence of vessels may result in localised, short-term interference to industry vessels requiring minor course alteration or readjustment in asset management while the Petroleum Activities Program is active in the area. However, impacts are not expected to have lasting effect.

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During EP consultation, Chevron advised Woodside of its intent to carry out a 4D Marine Seismic Survey (4D MSS) subject to approvals, in the vicinity of the Wheatstone facility. Timing of the survey is currently planned for Q1 2024 and may occur for up to two weeks at the same time as Trunkline installation as the PV moves through the Montebello MUZ and lays westward adjacent to the Wheatstone infrastructure. Any potential interaction will be managed through the SIMOPs process.

**Defence**

Defence activities in the vicinity of the Operational Area may include Naval vessel traffic and Air Force training exercises associated with the Learmonth Air Force Base (refer to Section 4.9.7). The Trunkline passes through a defence live firing range which is a Restricted Fly Zone. However, these activities are not expected to be a consistent presence in the area. Defence stakeholders were notified and feedback addressed as per 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)
Tourism and Recreation		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 E based on no lasting effect to the high value receptors. The impact significance levels for individual receptors are consistent with the levels rated in the OPP, noting that defence, tourism and recreation were not identified receptors for this risk in the Scarborough OPP.

**Demonstration of ALARP**

Control Considered	Control Feasibility (F) and Cost/Sacrifice (CS)	Benefit in Impact/Risk Reduction	Proportionality	Control Adopted
<b>Legislation, Codes and Standards</b>				
Vessels to adhere to the navigation safety requirements including the <i>Navigation Act 2012</i> 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 <b>C 1.1</b>
Establishment of temporary exclusion zones around vessels which are communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Establishment of exclusion zones around the vessels reduces the likelihood of interaction with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice	Yes <b>C 1.2</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Good Practice</b>				
Notify Australian Hydrographic Office (AHO) of activities and movements 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 interaction with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes <b>C 1.3</b>
Notify relevant government departments, fishing industry representative bodies, fishery licence holders and other oil and gas operators (if agreed during consultation) prior to commencement and upon completion of Activities.	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 interference with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes <b>C 1.4</b>
Notify AMSA Joint Rescue Coordination Centre (JRCC) of activities and movements 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 interference with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes <b>C 1.5</b>
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 <b>C 1.6</b>
<b>Professional Judgement - Eliminate</b>				
Limit 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
<b>Professional Judgement - Substitute</b>				
No additional controls identified.				

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Professional Judgement – Engineered Solutions</b>				
No additional controls identified.				
<p><b>ALARP Statement:</b></p> <p>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.</p> <p>As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.</p>				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
<p>The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5):</p> <ul style="list-style-type: none"> <li>• Overall impact significance levels for individual receptors are consistent with the levels rated in the OPP.</li> <li>• EPOs and controls in the Scarborough OPP that are relevant to the interaction with other users have been adopted.</li> <li>• There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.</li> </ul>
<p><b>Acceptability Statement:</b></p> <p>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.</p> <p>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, and AHO identified during impact assessment and stakeholder consultation. Further opportunities to reduce the impacts have been investigated above.</p> <p>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 presence of the Petroleum Activities Program to a level that is broadly acceptable.</p>

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 1</b></p> <p>Undertake the Petroleum Activities Program in a manner that will not have a substantial adverse effect on the sustainability of commercial fishing.</p> <p><b>EPO 2</b></p> <p>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.</p>	<p><b>C 1.1</b></p> <p>Vessels to adhere to the navigation safety requirements including the <i>Navigation Act 2012</i> and any subsequent Marine Orders.</p>	<p><b>PS 1.1</b></p> <p><i>Vessels compliant with Navigation Act and Marine Order 21 (Safety of navigation and emergency procedures) 2012</i></p>	<p><b>MC 1.1.1</b></p> <p>Marine assurance inspection records demonstrate compliance with standard maritime safety procedures</p>
	<p><b>C 1.2</b></p> <p>Establishment of temporary exclusion zones around vessels which are communicated to marine users.</p>	<p><b>PS 1.2</b></p> <p>No entry of unauthorised vessels within exclusion zones.</p>	<p><b>MC 1.2.1</b></p> <p>Records of breaches by unauthorised vessels within exclusion zones.</p> <p><b>MC 1.2.2</b></p> <p>Notice to Mariners (NTM) (including AUSCOAST</p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
			warnings where relevant) generated to communicate exclusion zones to marine users.
	<p><b>C 1.3</b> Notify AHO of activities and movements no less than four working weeks prior to the scheduled activity commencement date.</p>	<p><b>PS 1.3</b> 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)).</p>	<p><b>MC 1.3.1</b> Consultation records demonstrate that AHO has been notified prior to commencement of an activity</p>
	<p><b>C 1.4</b> Notify relevant government departments, fishing industry representative bodies, fishery licence holders and other oil and gas operators (if agreed during consultation) prior to commencement and upon completion of Activities.</p>	<p><b>PS 1.4</b> Notification to AFMA, CFA, DAFF (fisheries), DPIRD, WAFIC, Recfishwest, individual relevant fishery licence holders (in the operational area) and other O&amp;G operators (if agreed during consultation – refer to Table 7-9) ten days before activity commences, and following completion of activities.</p>	<p><b>MC 1.4.1</b> Consultation records demonstrate that stakeholders have been notified prior to commencement and following completion of the activity.</p>
	<p><b>C 1.5</b> Notify AMSA JRCC of activities and movements 24 to 48 hours before operations commence. 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.</p>	<p><b>PS 1.5</b> AMSA JRCC notified 24 to 48 hours before operations commence to prevent activities interfering with other marine users.</p>	<p><b>MC 1.5.1</b> Consultation records demonstrate that AMSA JRCC has been notified prior to commencement of the activity within required timeframes.</p>
	<p><b>C 1.6</b> Notify Defence of activities no less than five weeks before the scheduled activity commencement date.</p>	<p><b>PS 1.6</b> Notification to Defence five weeks prior to the scheduled commencement date.</p>	<p><b>MC 1.6.1</b> Records demonstrate that Defence has been notified prior to commencement of the Petroleum Activities Program within the required timeframes.</p>

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### 6.7.2 Physical Presence – Seabed Disturbance (trenching, spoil disposal, borrow ground dredging and Trunkline backfill)

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.1.6 – Seabed Disturbance														
Context														
<b>Relevant Activities</b> Seabed Intervention Activities – Section 3.9 Trunkline Installation Activities – Section 3.11 Contingent Activities – Section 3.13				<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Physical Environment – Section 4.4 Habitats and Biological Communities – Section 4.5				<b>Stakeholder consultation</b> 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
Trunkline trenching (and material disposal)		✓	✓		✓	✓	✓	A	D	-	-	LCS GP PJ	Broadly Acceptable	EPO 3, 4, 5, 6, 27, 31
Offshore borrow ground dredging		✓	✓		✓	✓	✓	A	D	-	-			
Trunkline backfill activities		✓	✓		✓	✓	✓	A	D	-	-			
Description of Source of Impact/Risk														
<p>This section assesses potential impacts from seabed disturbance resulting from Trunkline trenching and spoil disposal, offshore borrow ground dredging and Trunkline backfill activities. Seabed disturbance from trunkline installation and general seabed intervention activities are assessed in Section 6.7.3.</p> <p><b>Trunkline trenching and spoil disposal</b></p> <p>It is anticipated that trunkline stabilisation and hence trenching and backfill activities will be required in water depths shallower than 40 m, which corresponds to a location about 50 km offshore. Trunkline trenching activities will occur within the Trunkline Project Area (Section 3.9.3) and may result in seabed disturbance between the State Waters boundary (approximately KP 32) to a maximum of KP50 (including Spoil Ground 5A). Approximately 18 km in length and on average 30 m wide. The distance that trenching is required to extend into Commonwealth waters is being further refined during detailed engineering, so actual trenching and backfill activities may cover a smaller area.</p> <p>Pre-lay trenching works involves dredging a trench about 2 to 3.5 m deep within the indicative trunkline disturbance corridor (~30 m width). A seabed disturbance area of about 0.54 km<sup>2</sup> is expected.</p> <p>Trenched material from Commonwealth waters may be disposed into existing Spoil Ground 5A, which lies within the Trunkline Project Area and is approximately 300 m wide and runs for about 18 km between the State waters boundary and KP 50. A total volume of around 0.8 Mm<sup>3</sup> of trenched material may be disposed of within Spoil Ground 5A.</p> <p>Through the placement of sediment within Spoil Ground 5A, it is expected an area of around 1.6 km<sup>2</sup> of seabed disturbance may occur (with maximum allowable disturbance area of 5.1 km<sup>2</sup> based on the entire spoil ground being disturbed, which is not anticipated). Note Spoil Ground 5A has been used previously. In this activity, sediment will be released from the hopper doors on the bottom of the TSHD where it will rapidly descend and deposit on the seabed within the designated disposal area.</p>														

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**Offshore borrow ground dredging and Trunkline backfill**

After the installation of the trunkline in the trench, backfilling with dredged material from the Offshore Borrow Ground will be required to help stabilise the trunkline. Approximately 2 Mm<sup>3</sup> of backfill material will be sourced from the Offshore Borrow Ground, within Commonwealth waters. (Section 3.9.4). Approximately 0.9 Mm<sup>3</sup> (in the case of backfill from KP 32 to KP 50) of sandy sediments with a low proportion of fines will be required to help stabilise the trunkline in Commonwealth waters, with the remainder potentially being used in State waters for the same purpose. Backfill material will be dredged and placed using a TSHD.

When backfilling the trunkline some trench overflow may occur due to the natural angle of repose of the material, as well as influencing hydrodynamic factors such as currents. The indicative width of seabed disturbance within the Trunkline Project Area is 30 m (i.e., the trunkline disturbance corridor), however for sand backfilling it is expected sediments will settle further afield due to hydrographic conditions in some locations.

Dredging within the offshore borrow ground is expected to result in a seabed disturbance area of around 4 km<sup>2</sup> (with maximum allowable disturbance area of 17 km<sup>2</sup> based on the entire borrow ground being disturbed, which is not anticipated). To avoid accidental incursion of seabed disturbance into the Dampier AMP, which lies adjacent to the proposed Offshore Borrow Ground, a 250 m buffer zone will be applied.

**Contingency Activities**

Secondary dredging of the pre-lay trench via the TSHD may be required if the trench silts up prior to pipelay installation (Section 3.13.10). Any additional material removed from the trench would be placed in Spoil Ground 5A as described above.

**Seabed Disturbance Summary**

Table 6-4 provides details on the expected and maximum total seabed disturbance from trenching and spoil disposal and borrow ground dredging and backfill activities. All disturbance will occur within the disturbance footprint as detailed within Section 7.1.6.1 of the Scarborough OPP (SA0006AF0000002, Rev 5).

**Table 6-4: Dredging (trenching and borrow ground), spoil disposal and backfill seabed disturbance summary**

Activity	Description	Expected disturbance area (km <sup>2</sup> )	Maximum allowable disturbance area (km <sup>2</sup> )
Trunkline trenching, spoil disposal and backfill	Trunkline trenching and backfill <sup>1</sup>	0.24	0.54
	Spoil Ground 5A material disposal <sup>2</sup>	1.6	5.1
Offshore borrow ground dredging	Dredging within offshore borrow ground to source material for backfill	4	17

Note 1: Expected disturbance assumes KP32 to KP40, although impact assessment and maximum extent is to KP50

Note 2: Disturbance located within previously disturbed ground

**Detailed Impact Assessment**

**Assessment of Potential Impacts**

Seabed disturbance has the potential to result in the following impact(s):

- a change in habitat
- a change in water and sediment quality

Which may have the following further impacts

- injury and/or mortality to fauna

These are described in full in Section 7.1.6 of the Scarborough OPP (SA0006AF0000002, Rev 5), with no additional impacts identified for this EP. Where activities are consistent with those described in the Scarborough OPP, this section provides a summary of the assessment outcomes in the context of the Petroleum Activities Program covered by this EP. Where additional definition in relation to risks and impacts are available, this section provides additional detail as part of the impact assessment.

Sediment dispersion modelling approach

Sediment dispersion modelling was undertaken to assess the potential impacts to water quality and benthic communities from trenching and spoil disposal, and borrow ground dredging and backfill activities occurring in Commonwealth waters as part of the overall Scarborough project (which includes State and Commonwealth waters activities) (RPS 2022; Appendix I).

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Sediment dispersion modelling has been revised since the acceptance of the Scarborough OPP (RPS 2022) to account for further Project definition realised during front end engineering and design, including additional geotechnical results. The revised modelling also provided an opportunity to further refine the source term assumptions and approach with the modelling consultant, RPS, to incorporate further learning from the WAMSI dredging science node, where applicable. To support the revised modelling a two-stage peer review was completed, with Stage 1 being a review of the appropriateness of the model inputs and process for the revised Scarborough dredge dispersion modelling study, and Stage 2 a review of the outcomes of the modelling and in particular whether the interpretation and conclusions were appropriate, with due consideration to dredging science and guidance.

Model outputs were interrogated by a series of water quality thresholds to predict the extent of impacts in a series of zones as recommended by Technical Guidance Environmental Impact Assessment of Marine Dredging Proposals (EPA 2021). These zones included a Zone of Influence (ZoI), Zone of Moderate Impact (ZoMI) and Zone of High Impact (ZoHI) as described in Appendix I. As detailed in Section 4.1, the ZoI contributes to the extent of the EMBA for this EP and is defined as:

*‘The area within which changes in water quality associated with dredge plumes are predicted and anticipated during the dredging operations, but where these changes would not result in a detectable impact on benthic biota. These areas can be large, but at any point in time the dredge plumes are likely to be restricted to a relatively small portion of the Zone of Influence. The outer boundary of the Zone of Influence bounds the composite of all of the predicted maximum extents of dredge plumes and represents the point beyond which dredge-generated plumes should not be discernible from background conditions at any stage during the dredging campaign’.*

In recognition that different species may display different degrees of tolerance and susceptibility to the same level of sediment-related pressure, it is appropriate to generate different predictions for identified management zones for different groups of benthic organisms or community/habitat types. Three ecological zones have been defined based on the sensitivity of benthic receptors. The ecological zones are named as follows and shown in Figure 6-2 and Figure 6-3. Note only the Offshore Zone and Zone B are of relevance to the Commonwealth waters activities.

- Offshore – the trunkline area beyond KP25, and generally all areas north of a boundary line containing Rosemary Island, Legendre Island and Delambre Island. It is considered benthic communities will be sparse and made up largely of sponges and filter feeders without corals.
- Zone B – the trunkline area between KP8 and KP25, adjacent coral and macroalgae habitats within Mermaid Sound, and generally all coral, macroalgae and mixed community habitats between Dolphin Island and Bezout Island, including Madeleine Shoals.
- Zone A – the trunkline area between the shoreline and KP8, adjacent macroalgae and mangrove habitats within Mermaid Sound, and generally all mangrove, marsh and seagrass habitats between Nickol Bay and Point Samson. Water quality within Zone A is more turbid and coral communities comprise more sediment-tolerant or resilient species (Blakeway and Radford, 2005).

The OPP (Section 7.1.6) and modelling report (Appendix I) provides a description of the modelling thresholds as relevant to each ecological zone, including source literature and rationale. Results of the modelling as relevant to the Commonwealth activities are summarised below with details provided in Appendix I.

Sediment Dispersion Modelling Results Summary

Dredging of the trench and spoil disposal activities to be undertaken in Commonwealth waters (Figure 6-2) are predicted by the modelling to cause detectable changes in water quality from elevated suspended sediment concentrations (as represented by the ZoI), however these increases in suspended sediment are predicted to remain below the intensity-duration thresholds that may cause an impact to benthic biota (as represented by the lack of ZoMI in Commonwealth waters). This is based on the conservative application of coral thresholds in State waters (including Madeleine Shoals, north of Legendre Island) and sponge thresholds in the offshore zone (i.e., Dampier AMP), as the most sensitive receptors in each zone.

For Offshore Borrow Ground dredging and backfill activities (Figure 6-3) the majority of the sediment suspended by dredging is forecast to be dispersed in the offshore area between the borrow ground and Legendre Island, including incursion into the Dampier AMP. Detectable changes in water quality, as represented by the ZoI, are predicted to extend into the Habitat Protection Zone (IV) of the Dampier AMP, but are not forecasted to intersect with the National Park Zone (II). Elevated suspended sediments are predicted to remain below the intensity-duration thresholds that may cause an impact to benthic biota (as represented by the lack of ZoMI).



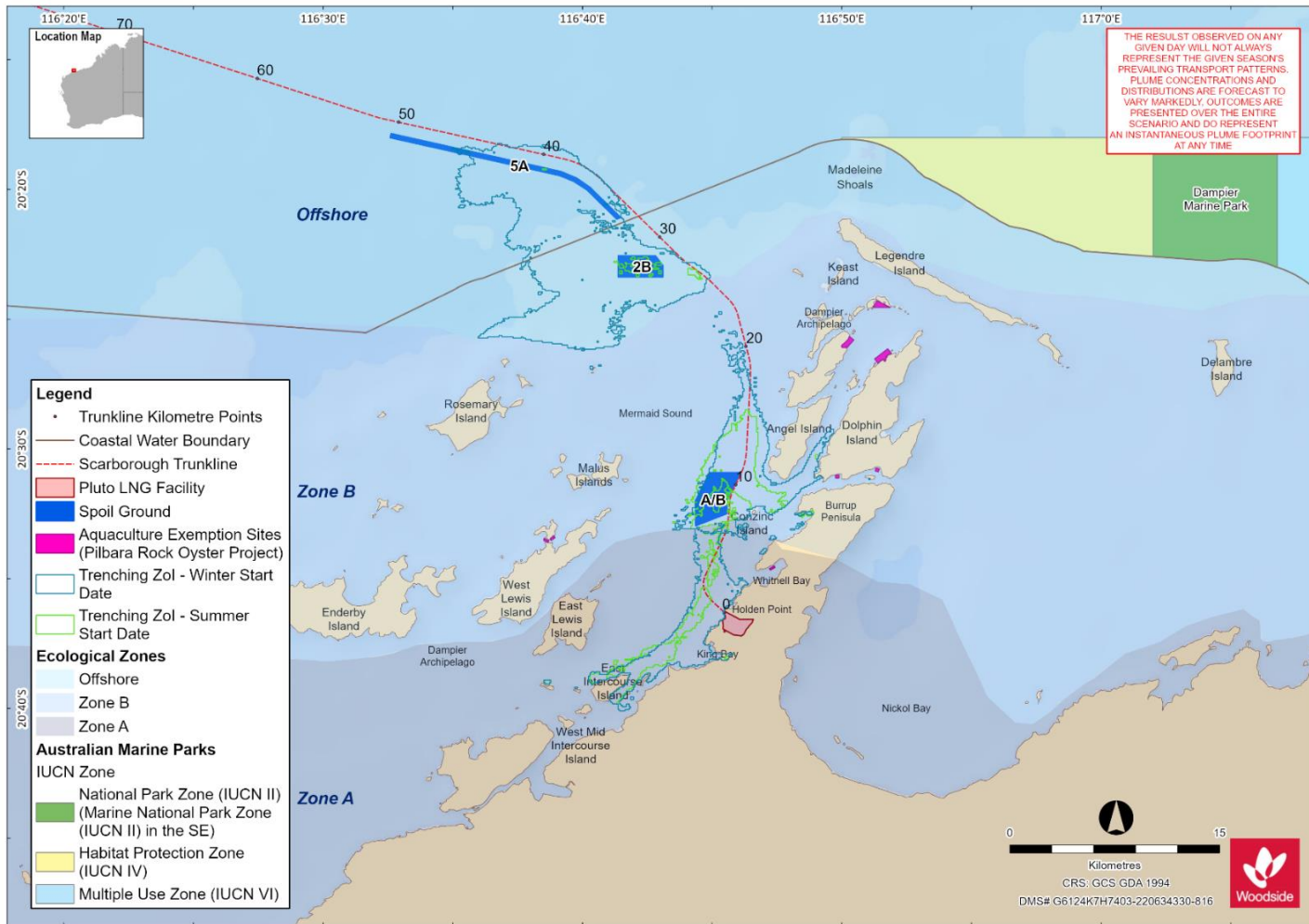
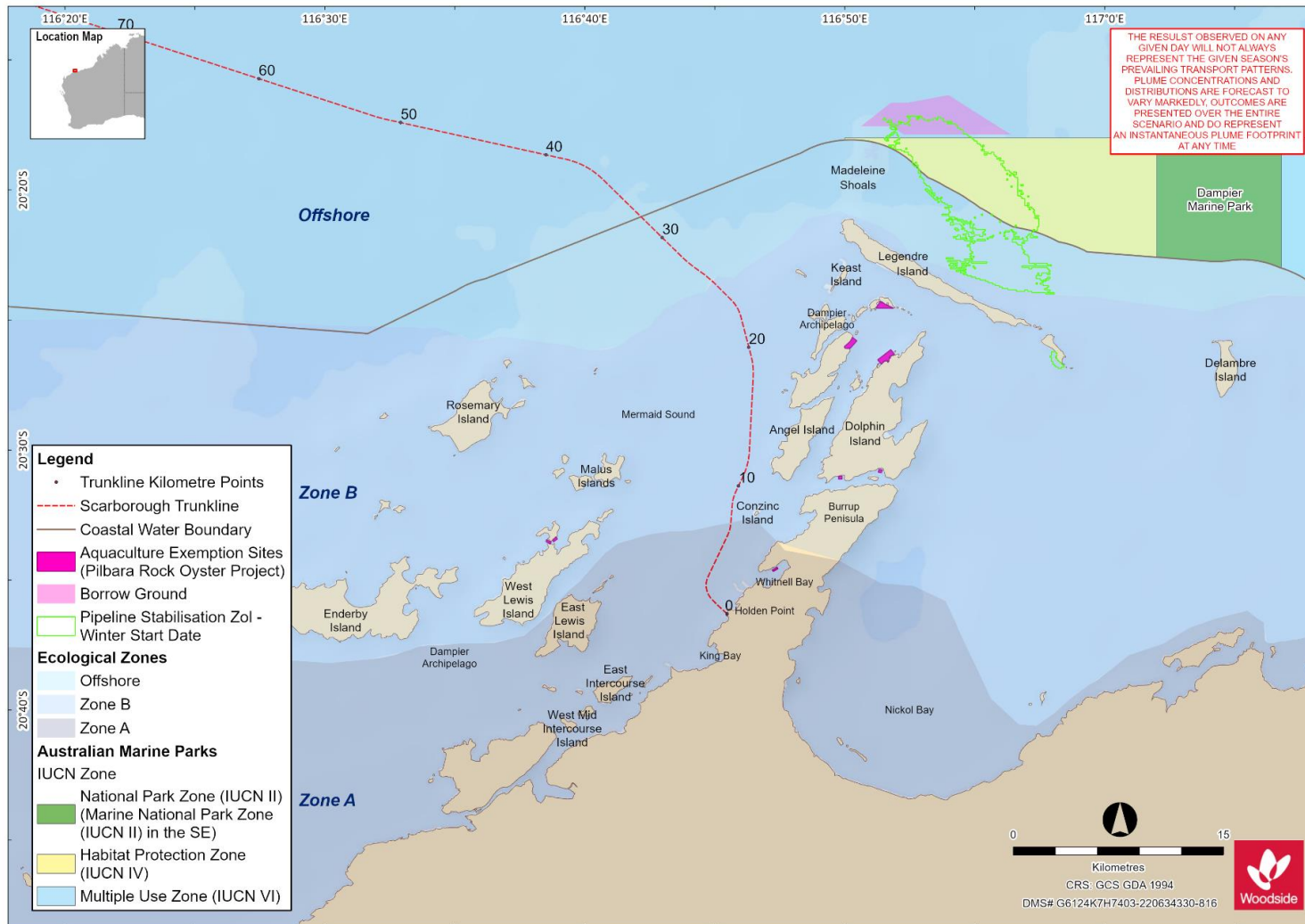


Figure 6-2: Predicted Zol for pipeline trenching and spoil disposal in Commonwealth and State waters (based on 24-hour rolling average). Zol does not represent an instantaneous plume footprint at any point in time, but rather a composite of all of the predicted maximum extents of dredge plumes

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**Figure 6-3: Predicted Zol for pipeline stabilisation activities with backfill material sourced from Offshore Borrow Ground (based on 24-hour rolling average). Zol does not represent an instantaneous plume footprint at any point in time, but rather a composite of all of the predicted maximum extents of dredge plumes**

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**Water and Sediment Quality**

Water quality change occurs when seabed sediments enter the water column (turbidity). Turbidity may occur during any activity which requires contact with, or occurs in close proximity to, the seabed. After a period, the suspended sediments settle and the turbidity in the water column returns to pre-disturbance levels. Impacts to sediment quality may occur from the redistribution of sediments, including changes to particle size distribution.

Potential impacts associated with changes in water quality is influenced by the local environment (sediment particle size distribution, natural turbidity) and nature of the activity, as described below:

- Elevated suspended sediment concentrations in the water column due to dredging, spoil disposal and backfill activities are expected to be spatially and temporally confined due to progression of the activities along the trunkline route. During trenching and borrow ground dredging by the trailing suction hopper dredge (TSHD), the primary plume at the draghead and from overflow is expected to settle within days, with the majority of particles suspended during the activity settling directly to the seabed, with some finer particle settling further afield. Monitoring results from the Pluto LNG Foundation project indicated a rapid decrease in turbidity beyond the immediate dredging footprint, with the median turbidity measured in proximity to the dredge rapidly dropping below the median and 80th percentile of natural turbidity at two reference sites located in areas unaffected by dredging (MScience, 2018).
- Similarly, spoil disposal activities within Commonwealth waters are expected to result in short term elevations during disposal, progressing along Spoil Ground 5A, parallel to the trunkline route. During disposal of trenched material from the TSHD, sediment would be released into the upper part of the water column, from where it would rapidly descend as a density current, with the heavy particles tending to entrain lighter particles, followed by a billowing of lighter components back into the water column after contact with the seabed. It is expected that these particles would likely settle back to seabed within hours/days, with some finer particles settling further afield.
- Peaks in suspended sediment associated with borrow ground dredging are expected to be of short duration given the intermittent nature of the activity, whereby the dredge fills the hopper (typically using overflow), sails to the trunkline section and places backfill material. Backfill operations involve the placement of coarser materials for trunkline stabilisation, and the fines component is therefore expected to be less than the dredging of the seabed. Given the lower fines component, suspended sediments are expected to settle more rapidly, limiting the temporal and spatial scale of any elevated turbidity.
- Note that the overflow funnel(s) of the TSHD will be fitted with "green valves". These valves restrict the entrainment of air into the overflow mixture thereby minimising fines dispersal and associated turbidity. Additionally, the overflow material sinks more rapidly due to density effects allowing better settlement of overflow material (refer to Demonstration of ALARP below).
- Water quality changes as a result of trenching, spoil disposal (within Spoil Ground 5A), borrow ground dredging and associated backfill activities in Commonwealth waters have been examined through sediment modelling (as summarised above), which reported:
- Detectable changes in water quality (as represented by the ZoI) from trenching and spoil disposal in Commonwealth waters is predicted to remain within the vicinity of the activity, with some minor incursion into State waters (Figure 6-2). These increases in suspended sediment concentrations are not predicted to exceed thresholds that may cause an impact to benthic biota (as represented by the lack of ZoMI) in Commonwealth waters.
- For offshore borrow ground dredging and backfill activities the majority of the sediment suspended by dredging is forecasted by the modelling to be dispersed in the offshore area between the borrow ground and Legendre Island in both seasons (Figure 6-3). Detectable changes in water quality, as represented by the ZoI, are predicted to extend into the Habitat Protection Zone (IV) of the Dampier AMP, but not the National Park Zone (II), as well as a small isolated pocket on the southern side of Hauy Island. As stated above, elevated suspended sediments are predicted to remain below the intensity-duration thresholds that may cause an impact to benthic biota (sponges) in the AMP and coral communities at Hauy Island (as represented by the lack of ZoMI). In the offshore ecological zone, the ZoI at the offshore borrow ground is only predicted when this activity is being undertaken during winter. This is largely a consequence of the lower thresholds applicable during the winter period, and hence the lower levels of dredge-excess suspended sediment concentrations (SSC) required to exceed the ZoI threshold.
- Following trenching and spoil disposal and borrow ground dredging and backfill activities, the sediment dispersion modelling predicts some secondary resuspension of sediment may occur in localised areas in Commonwealth waters due to tides, winds and waves for up to around four weeks at low concentrations.

Sediment sampling along the proposed pipeline route has demonstrated that sediments are suitable for unconfined ocean disposal with results indicating that all levels of potential contaminants of concern were below the NAGD (2009) screening levels. Therefore, sediments to be dredged (and suspended during operations) are considered to be uncontaminated and thus no toxicological impacts from the resuspension of contaminants are predicted.

Impacts from seabed disturbance on water and sediment quality will be slight. Receptor sensitivity of water and sediment quality is low (low value, open water), and therefore the Impact Significance Level of seabed disturbance on water and sediment quality is **Negligible (F)**.

**Epifauna and Infauna**

Seabed disturbance and potential impacts to epifauna and infauna may occur as a result of the mobilisation and/or displacement of sediments along the trunkline and during borrow ground dredging activities. Disturbance to the seabed can alter the physical seabed habitat conditions, resulting in epifauna and infauna community changes (Newell et al., 1998). Potential impacts include:

- Direct impacts, including physical removal and irreversible loss of benthic communities and habitat and temporary alteration of the existing hydrodynamic regime within the direct footprint of activities.
- Indirect impacts caused by reduced water quality or increased sedimentation, including indirect effects on filter feeder-sponge habitat through reduced light availability for photosynthesis of the sponges' symbionts and reduced filtering and feeding (Abdul Wahab et al., 2019).

The below discusses the potential epifauna and infauna impacts for individual activities:

- Dredging, spoil disposal and backfill activities will alter the seabed habitats over which the activities occur, resulting in epifauna and infauna community changes. Direct impacts from these activities may occur in areas described in Section 4.5. Noting following trunkline installation, sand from backfill operations may settle in a wider corridor beyond the 30 m average trunkline disturbance corridor, but is expected to settle in a thin layer beyond the immediate area of material distribution. The overall trunkline disturbance area allows for the distribution of some sediments to be wider than 30 m as in some areas it is significantly less than 30 m.
- Sediment dispersion modelling (RPS 2022) of trunkline trenching and spoil disposal (within Spoil Ground 5A), and borrow ground dredging and associated backfill activities in Commonwealth waters found detectable changes in water quality (as represented by the ZoI), however the increases in suspended sediment concentrations are not predicted to exceed thresholds that may cause an impact to benthic biota (as represented by the lack of ZoMI). Noting the ZoI does not represent an instantaneous plume footprint at any point in time, but rather a composite of all of the predicted maximum extents of dredge plumes.
- The habitats likely to be present along the trunkline between KP 32 and KP 50 (including Spoil Ground 5A) are detailed in Section 4.5. Epifaunal communities are classed as sparse and of low diversity in the vicinity of the proposed trunkline between KP 32 and KP 50. Both epifaunal and infaunal communities are considered representative of the area and are similar to those observed in other regional studies where seabed sediments consist of silty to coarse sands, typical of the North West Shelf (Keesing, 2019; Advisian, 2019b). Drop camera surveys completed in Spoil Ground 5A prior to its use for the Pluto LNG Foundation project showed that benthic communities and habitats were sparse, and current coverage is expected to be similar (Section 4.5.2). Spoil Ground 5A is a previously disturbed area, and as such, the use of this ground will not destroy, fragment or disturb significant epifaunal or infaunal communities. The proposed trunkline route has been selected to avoid sensitive habitats as far as practicable and utilises existing routes established as part of the Pluto LNG Foundation project. The trunkline route between KP 32 and KP 50 does not pass through any AMPs or KEFs.
- Borrow ground dredging will occur within the Offshore Borrow Ground with approximately 2 Mm3 expected to be sourced, over an area of about 17 km2 (of which about 4 km2 is expected to be disturbed). This area consists of bare substrate with large areas of seabed largely devoid of any epibenthic species (Section 4.5). Drop camera surveys (Advisian, 2019c) indicated anemones and crinoids occur at ~5% density, and were only observed at two of twenty nine sites surveyed. Direct impacts from dredging on the epifauna and infauna will therefore be limited due to low density cover. Beyond this direct disturbance area, modelling (RPS, 2022) has shown that the elevations in turbidity as a result of dredging operations adjacent to the Dampier AMP will remain below the intensity-duration thresholds predicted to cause an impact to benthic communities. Impacts to the values of the Dampier AMP are further assessed in the AMP section below.
- Epifauna and infauna along the trunkline, in the Borrow Ground and in the adjacent Dampier Marine Park may be foraging habitat to marine turtles. Any impacts to the value of the foraging grounds, including from changes to epifauna and infauna, and any subsequent impact to marine turtles, is further assessed in the Marine Turtle section below.

Given the habitats likely to be present along the trunkline KP 32 and KP 50 (as described above) and the lack of impacts predicted from elevated turbidity in the Dampier AMP, the magnitude of impacts from seabed disturbance on epifauna and infauna from trenching, spoil disposal and backfill operations is assessed to be minor. Receptor sensitivity of epifauna and infauna is low (low value, homogenous). The Impact Significance Level of seabed disturbance on epifauna and infauna has therefore been identified as **Slight (E)**.

**Coral**

Trenching and spoil disposal and borrow ground dredging and backfill activities have the potential to impact coral as a result of elevated concentrations of suspended sediment (turbidity), changes in light quality and quantity, and sedimentation (Jones et al. 2016). Elevated turbidity within the water column reduces light penetration and therefore the availability of light for photosynthesis (Erftemeijer et al. 2012). While, elevated sedimentation rates may also suppress coral growth and survival when energy expenditure is redirected to actively clear settled sediments from coral tissue (Erftemeijer et al. 2012; Jones et al. 2016).

Coral communities of the Dampier Archipelago predominantly occur as narrow linear features fringing the shorelines of islands and the Burrup Peninsula, typically between 2 m and 10 m mean lower low water (Blakeway and Radford, 2005;

Jones, 2004). Within Commonwealth waters, geophysical surveys coupled with environmental data found that the trunkline route consists of carbonate sands with some finer components, which supports sparse filter feeder communities. Similarly, preliminary findings from the benthic habitat survey completed in the Borrow Ground Project Area and adjacent areas of the Dampier AMP found that benthic habitat within the Borrow Grounds Project Area and the adjacent area of the Dampier Marine Park Habitat Protection Zone (IV) consisted of sand with little to no biota throughout the area. As such no direct disturbance to coral communities from installation and seabed intervention activities is expected.

Modelling has been completed that considers impacts to benthic communities and habitats in Commonwealth and State waters, including coral habitats of the Dampier Archipelago and inshore of the proposed Borrow Ground (RPS 2022). Modelling has shown that trenching and spoil disposal and borrow ground dredging and backfill activities undertaken in Commonwealth waters are predicted to cause detectable changes in water quality from elevated suspended sediment concentrations (as represented by the Zol), that are predicted to extend into State waters. The Zol is only predicted to coincide with coral communities in an isolated pocket on the south side of Hauy Island, with no overlap predicted on the seaward slopes of outer islands such as Legendre Island and around Madeleine Shoals. Increases in suspended sediment levels are however predicted to remain below the intensity and duration thresholds at which impacts to benthic biota may occur. Modelling has also shown that SSC levels are predicted to be an order of magnitude below the SSC levels required to sustain a sedimentation rate close to that reported as having effects on benthos (Duckworth et al., 2017).

The effects of dredging-related pressures on coral fertilisation, larval development and settlement have also been assessed with reference to broadcast spawning species and coral spawning window/s of environmental sensitivity (CWES). Fertilization is sensitive to elevated suspended sediments whereby suspended sediments adhered to the mucous membrane of the egg-sperm bundles, reducing their ascent or preventing them from reaching the water surface (Negri et al. 2019). Ricardo et al., (2016; 2015) concluded that high SSCs can affect the ascent of egg-sperm bundle and egg-sperm encounter rates, and fertilization success at the surface. For colonies spawning from 15 m depth, coarse-silt SSCs of 35 mg L<sup>-1</sup> resulted in a 10% decrease in egg-sperm encounters, while from shallower (5 m deep), the EC10 occurred at an SSC of 106 mg L<sup>-1</sup> (Ricardo et al. 2017). As stated in Negri et al. (2019) and supported by sediment dispersion modelling, these SSCs and particle sizes typically occur close to the dredging activity and are commonly associated with upper-percentiles of sediment plumes from dredging or natural resuspension events. Given fertilization occurs within the first few hours of spawning (Ricardo et al. 2017) and the distance from borrow ground dredging activities to coral communities (Madeleine Shoals >3 km; Legendre Island > 6km), only a small number of coral larvae (if any depending on prevailing currents) may encounter elevated SSCs in close proximity to dredging activities in Commonwealth waters that may affect fertilization. Further, although the zone of influence extends to Hauy Island (in State waters) it is not predicted to reach SSCs that may affect fertilization in shallow waters.

For the pelagic stages of the larvae at the surface and in the water column, Ricardo et al (2017) concludes that embryogenesis and larval development were quite insensitive to elevated suspended sediment, with mucous secretion and cilia beating effectively used to protect coral embryos and larvae from elevated SSCs. Embryo survivorship and subsequent metamorphosis were not affected across the range of SSCs tested, in some assays as high as ~1000 mg L<sup>-1</sup> (Ricardo et al. 2017). Negri et al (2019) concludes that where coral spawning occurs at a distance from the dredging activities and developing embryos and larvae drift into a turbid plume of similar SSCs, there is comparatively little risk of negative effects on embryo and larval survivorship. As such although planktonic coral larvae may drift into the sediment plume generated by trenching and spoil disposal, and offshore borrow ground dredging in Commonwealth waters, embryo and larval survivorship is unlikely to be negatively affected.

In contrast, the settlement phase is at risk if the options for larval settlement are primarily on upper surfaces that are (or have recently been) coated in an elevated yet thin film of deposited sediments from a dredging plume (Negri et al. 2019). Larval settlement has found to be sensitive to deposited sediment, with very low levels of fine deposited sediment (i.e. <~5 mg cm<sup>2</sup> day) deterred settlement and caused a change in larval settlement preference to sediment (Negri et al 2019). Given the distance of trenching and spoil disposal, and borrow ground dredging and backfill activities in Commonwealth waters from coral communities, and that modelling only predicts a zone of influence to extend to isolated areas of coral communities (e.g. Hauy Island), these activities are not anticipated to result in increased sediment deposition in nearshore benthic habitats over that experienced naturally (i.e. spring tides, elevated metocean conditions etc.) and hence no impacts to coral settlement expected.

In summary, elevated suspended sediments from dredging activities in Commonwealth waters are not predicted (based on modelling) to interact with coral larvae (both pelagic and during settlement) at concentrations that may impact the various developmental stages. Given direct and indirect impacts to coral habitat are not predicted from seabed intervention activities in Commonwealth waters, the magnitude of impacts from seabed disturbance is assessed to be 'no lasting effect'. Receptor sensitivity of coral is high. The Impact Significance Level of seabed disturbance on coral has therefore been identified as **Slight (E)**.

### **Fish**

Increased suspended sediments concentrations (SSC) associated with dredging, spoil disposal and backfill operations, as well as the installation of infrastructure may affect fishes ability to forage, hunt and avoid predators (Harvey et al., 2017). Elevated concentrations of suspended sediments may also cause physiological impacts such as gill impairment. An analysis of available literature by Harvey et al. (2017) suggests that impacts from very fine sediment range from

minimal (10 mg/l SSC<sup>17</sup>) to extreme (1000 mg/l SSC) (Harvey et al., 2017). Note the studies that made up the species sensitivity distribution from which this value was derived were based on exposure to very fine sediment (<4 µm) in a controlled environment, and exposure times ranging from 0.08 hours to 120 hours. While the Commonwealth activities are being undertaken in open ocean environment, with the sediments being predominantly sand (>75 µm) with minimal fines.

For dredging, spoil disposal and backfill activities undertaken in Commonwealth waters, modelling indicates that excess SSC is predicted to remain less than 10 mg/L, based on 95<sup>th</sup> percentile depth averaged results<sup>18</sup> (Figure 5-2 and Figure 5-6 of Appendix I). Further, the trenching and backfill operations are expected to rapidly progress along the trunkline route ensuring increased suspended sediment levels are spatially and temporally confined. Similarly, spoil disposal activities within Commonwealth waters are expected to result in short term elevations during disposal, as they progress along Spoil Ground 5A, parallel to the trunkline route. While elevated SSC at the borrow ground during dredging will be intermittent given the nature of the activity (i.e., dredging then backfill).

Given potential impacts to fish are not predicted from seabed intervention activities in Commonwealth waters, the magnitude of impacts from seabed disturbance is assessed to be 'no lasting effect'. Receptor sensitivity of is high. The Impact Significance Level of seabed disturbance on fish has therefore been identified as Slight (E).

### **Marine Turtles**

Five species of marine turtle may occur in the Operational Area: flatback, green, hawksbill, loggerhead and leatherback turtles. The Operational Area overlaps internesting habitat critical and BIAs (internesting buffer) for flatback, green and hawksbill turtles around the Dampier Archipelago and Montebello Islands (Section 4.6). Activities in proximity to these sensitive locations are limited to the trenching and backfill along the trunkline route (KP 32 to KP 50), dredging within the Offshore Borrow Ground Project Area and disposal of material in Spoil Ground 5A. There is no overlap with foraging BIAs for any turtle species.

The Recovery Plan for Marine Turtles in Australia (DoEE, 2017) identifies habitat modification from infrastructure/coastal development as a threat to the stocks of flatback, green, and hawksbill turtles in the North West Shelf and Pilbara region.

Flatback, green and hawksbill turtles have an omnivorous diet; with flatbacks feeding mainly on algae and a variety of invertebrates (molluscs, soft corals, sea cucumbers and jellyfish), hawksbills primarily targeting sponges but also consuming seagrass and invertebrates (shrimp, squid, anemones, sea cucumbers and soft corals), and green turtles eating seagrass, macroalgae and jellyfish. Marine turtle foraging habitat is widely represented in the region and any loss is expected to be negligible. Further to this, surveys of the trunkline route have not indicated the presence of any unique or limiting benthic foraging habitat for marine turtles within the trunkline corridor. While there are no designated foraging BIAs for marine turtles that overlap the Dampier Marine Park, foraging for marine turtles is an identified value of the Park. Recent benthic habitat surveys of an area of the Dampier AMP habitat protection zone adjacent to the Borrow Grounds Project Area (Advisian, 2019c) showed the seabed and benthic composition of the area surveyed was relatively uniform in structure and composition. Sediment dispersion modelling for the dredging of the Borrow Ground showed no exceedance of the ZoMI or ZoHI in the offshore ecological zone. A ZoI was defined which does extend into the boundary of the habitat protection zone of the Dampier Marine Park. However, it is noted that the ZoI is defined as an area within which changes in water quality associated with dredge plumes are predicted but where these changes would not result in a detectable impact on benthic biota including epifauna and infauna which may have foraging value of the adjacent habitat protection zone. As such impacts to epifauna and infauna are not likely to result in displacement of marine turtles from foraging areas in shallower waters of the Trunkline and Borrow Ground Project Areas.

Based on the key food sources of marine turtle species, and the low relative abundance of epifauna and infauna found in the Trunkline and Borrow Grounds project areas, these areas are unlikely to support foraging aggregations of marine turtles (Pendoley Environmental, 2020). Any impacts from seabed disturbance on epifaunal communities may result in some changes to, and/or loss of, foraging habitat for marine turtles, or displacement of individual turtles from areas utilised as foraging habitat. Internesting behaviours exhibited by flatback turtles extend further offshore compared to other marine turtle species in the NWMR. However, tracking data indicates that flatback turtles in the NWMR travel and forage in relatively shallow coastal waters less than 70 m deep (Chevron Australia Pty Ltd, 2015). The 60 km internesting buffer for flatback turtles in the Recovery Plan for Marine Turtles in Australia (DoEE, 2017) is based primarily on the movements of tagged internesting flatback turtles along the North West Shelf from a 2014 study, which found that flatback turtles may demonstrate internesting displacement distances up to 62 km from nesting beaches (Whitlock et al., 2014). However, these movements were confined to longshore movements in nearshore coastal waters or travel between island rookeries and the adjacent mainland (Whitlock et al., 2014). The flatback turtle internesting habitat along the North West Shelf has since been defined more precisely using satellite tracking of 47 turtles, combined with a range of environmental variables (Whitlock et al., 2016a). Suitable internesting habitats were identified as water depths of 0 – 16 m, within 5 – 10 km of the coastline. These were located close to a number of known flatback turtle rookeries within the region. Unsuitable internesting flatback habitats were identified as water depths of > 25 m depth and > 27 km from the coastline. The primary environmental variables that influenced flatback internesting movements were bathymetry, distance from coastline and sea surface temperature (Whitlock et al., 2016a).

Suitable internesting habitat for green turtles is also likely to be limited to relatively shallow waters within close proximity of the coastline. While information on internesting movements of green turtles in Western Australia is limited, tracking

<sup>17</sup> The 10 mg/L is considered conservative as it is based on the lower confidence interval of the 90% species protection level.

<sup>18</sup> The depth-averaged TSS concentration is the value calculated as an average over all modelled layers in the water column.

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data has shown that during nesting periods, female green turtles typically inter-nest in shallow, nearshore waters between 0 and 10 m deep (Pendoley, 2005) and remain <5 km nesting beaches on Barrow Island, Varanus Island, and Rosemary Island (Pendoley, 2005) and within 10 km of nesting beaches on the Lacepede Islands (Waayers et al., 2011). Other international studies also suggest internesting grounds for green turtles are located close to nesting beaches, in 10–18 m of water (Stoneburner, 1982; Mortimer and Portier, 1989; Maylan, 1995; Tucker et al., 1995; Starbird and Hills, 1992). Hays et al. (2000) deployed time-depth recorders on green turtles that had nested on Ascension Island in the South Atlantic, to examine their diving behaviour during the subsequent internesting interval. Dive profiles indicated turtles remained at a fixed depth for an extended period, surfacing briefly, before diving to the same depth. The maximum depth routinely reached was between 18 to 20 m and > 20 m resting dives were extremely rare (Hays et al., 2000). Further published research by Ferreira et al., (2021), showed satellite tracked and modelled green turtle distribution and movement were well matched with the defined internesting BIAs/habitat critical to survival buffers, migration routes were predominately coastal with some green turtles remaining as residents, and foraging habitat not well defined and extensive in state coastal waters.

Female hawksbill turtles have been reported to remain within 10 km of their nesting beaches on Varanus Island, and within 1 km on Rosemary Island (Pendoley, 2005).

The shallowest point of the Trunkline Project Area occurs in waters adjacent to the Dampier Archipelago (approximately 30 m depth). In the Offshore Borrow Ground Project Area, water depths range between 30 to 40 m, and internesting green and hawksbill turtles are unlikely to utilise the habitats at these depths. Therefore, seabed disturbance within the Trunkline and Offshore Borrow Ground Project Areas is not expected to adversely impact on biologically important behaviours or biologically important habitat, including habitat critical to the survival of marine turtles. The Operational Area is not likely to represent important internesting habitat for flatback, green and hawksbill turtles, and any displacement of individuals from areas utilised as foraging habitat will not result in any significant impacts at a population level.

Impacts from seabed disturbance on marine turtles will be slight. Receptor sensitivity of marine turtles is high, and the Impact Significance Level of seabed disturbance on marine turtles is **Minor (D)**.

**Australian Marine Parks**

The offshore borrow ground dredging will occur adjacent to the Dampier AMP, with a 250 m buffer applied from the Marine Park boundary to avoid accidental incursion. 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. A 2017 survey of the park reported sponges to account for 20 – 50% of biota, including several rare and endemic species (Keesing et al., 2019). The North-west Marine Parks Network Management Plan (DNP, 2018a) also lists natural, heritage, cultural and socio-economic values of the AMP as described in Section 4.8. The park includes a Habitat Protection Zone which provides for the conservation of ecosystems, habitats and native species as a result of the high biodiversity and natural values.

Sediment dispersion modelling (RPS, 2022) for dredging in the Offshore Borrow Ground Project Area has indicated that detectable water quality changes (as represented by the ZoI) are not predicted within the National Park Zone (II) of the Dampier AMP. Furthermore, elevated suspended sediment concentrations within the Habitat Protection Zone (IV) of the Dampier AMP are predicted to remain below the intensity-duration thresholds that may cause an impact to benthic biota (as represented by the lack of ZoMI). Although there is a predicted temporary and intermittent detectable change in water quality that extends into the Habitat Protection Zone (IV) of the AMP these are expected to have minimal impacts on protected marine fauna, including humpbacks, shearwaters and marine turtles, limited to behavioural impacts which would be too small or meaningful to measure (NOAA, 2021). Therefore, given the nature of the change is temporary, impacts upon threatened, migratory, marine or cetacean species listed under the EPBC Act, is not expected. Therefore, no impacts are expected to the cultural values of the AMP as those are intrinsically linked to the natural values described above.

Therefore as there is no predicted impacts to the natural, cultural, heritage or socio-economic values of the AMP, dredging in the offshore borrow ground is therefore not inconsistent with the objectives of the North-west Marine Parks Network Management Plan (Table 6-39) or the zoning of the Dampier AMP (DNP, 2018a). Impacts from seabed disturbance on the Dampier AMP will be slight. Receptor sensitivity of AMPs is high (high value habitat). The Impact Significance Level of seabed disturbance on the Dampier AMP has been identified as **Minor (D)**.

**Summary of Assessment Outcomes**

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level / Risk Consequence
Water quality	Change in water quality	Low value	Slight	Negligible (F)
Sediment quality	Change in sediment quality	Low value	Slight	Negligible (F)
Epifauna and infauna	Change in habitat	Low value	Minor	Slight (E)

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Coral	Change in habitat	High value	No lasting effect	Slight (E)
Fish	Injury/mortality to fauna	High value	No lasting effect	Slight (E)
Marine turtles	Change in habitat Injury/mortality to fauna	High value	Slight	Minor (D)
AMPs	Change in habitat Change in water quality	High value	Slight	Minor (D)

**Overall Impact Significance Level/ Risk Consequence:** The overall impact significance level for disturbance to benthic habitat from trenching and spoil disposal, and borrow ground dredging and backfill activities is D based on a minor impact to the most sensitive receptors (marine fauna and AMPs). The impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
Comply with in force Sea Dumping Permit (No. SD2019/3982 or amended), which includes the following: <ul style="list-style-type: none"> <li>Contractor must only dump within the disposal site.</li> <li>Contractor must ensure the dredged material is dumped in a manner over the disposal site to minimise mounding from dumping activities.</li> <li>Contractor must establish by GPS that, prior to dumping, the vessel is within the disposal site.</li> </ul>	F: Yes CS: Significant costs associated with the studies and development of a sea dumping permit.	Implementation of the control provides regulation of sea dumping and includes an impact assessment to ensure environmental impact is minimised.	Control based on legislative requirements – must be adopted.	Yes <b>C 2.1</b>
Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act	F: Yes CS: Costs associated with the implementation	Implementation of the control ensures any impacts to significant Aboriginal areas and significant Aboriginal objects protected by Ministerial declaration, are acceptable under the standards of the ATSIHP Act.	Control based on legislative requirements – must be adopted.	Yes <b>C 2.9</b>
<b>Good Practice</b>				
Implement the water quality monitoring program and	F: Yes.	Implementation of the TMMF will reduce the	Benefits outweigh cost/sacrifice.	Yes <b>C 2.2</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
Tiered Monitoring and Management Framework to manage water quality associated with Commonwealth dredging, spoil disposal and backfill activities to avoid reversible impacts to coral communities as the most sensitive receptor in Ecological Zone B and sponges in the Offshore Zone.	CS: Significant costs associated with implementing the water quality monitoring program.	potential magnitude of impact as a result of dredging, spoil disposal and backfill operations.  If Tier 2 or Tier 3 management triggers are breached as a result of dredging, spoil disposal or backfill activities, management actions will be implemented to reduce turbidity levels.  <i><sup>1</sup> Tier 3 triggers are based on a water quality level at which reversible impacts may occur</i>		
A 250 m buffer zone will be implemented between the offshore borrow ground and the Dampier AMP	F: Yes. The implementation of the buffer is feasible whilst ensuring there is enough sand available for the backfill activities. Increasing the buffer may limit the sand available for backfill resulting in the use of an additional borrow ground.  CS: Minimal sacrifice.	This control would reduce the risk of potential direct disturbance with the Dampier AMP.	The control would significantly reduce the risk of direct disturbance within the Dampier AMP and the cost of implementation is minimal.	Yes <b>C 2.3</b>
TSHD draghead will be positioned (using DGPS) within approved footprints prior to and during trenching, borrow ground dredging and backfill activities	F: Yes. It is possible to confirm location prior to and during activity  CS: No sacrifice as dredging within the design footprint forms part of the base cost for the project.	This control reduces the impacts from direct disturbance as positioning has been pre-determined and confirmed.	The control would significantly reduce the risk of impacts from direct disturbance with minimal cost.	Yes <b>C 2.4</b>
THSD overflow pipes to be raised prior to spoil or backfill transport.	F: Yes  CS: Minimal cost.	Raising overflow pipes during transport will minimise potential losses of sediment during sailing and reduce the area where potential water quality changes may occur.	Benefits outweigh cost/sacrifice	Yes <b>C 2.5</b>
TSHD hopper door seals will be inspected prior to mobilisation.	F: Yes  CS: Minimal cost.	Premobilisation inspection will ensure hopper door seals will minimise potential losses of sediment during sailing and	Benefits outweigh cost/sacrifice	Yes <b>C 2.6</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
		reduce the area where potential water quality changes may occur.		
<p>For Borrow Ground dredging during coral spawning critical window/s of environmental sensitivity (CWES) TSHD to either:</p> <ul style="list-style-type: none"> <li>operate with no overflow;</li> <li>OR where this is not possible</li> <li>suspend borrow ground dredging</li> <li>Coral spawning CWES dates related to the activity are defined below<sup>19</sup>:</li> <li>28 November to 7 December 2023; (full moon 27 November)</li> <li>30 March to 8 April (full moon 25 March 2024)</li> </ul>	<p>F: Yes although given predicted suspended sediment concentrations and location in Commonwealth waters the risk of potential impacts to coral larvae is considered to be low.</p> <p>CS: Significant cost and potential schedule impacts.</p>	<p>Implementation of this control will reduce the risk of elevated suspended sediment on coral spawning in the vicinity of Madeleine Shoals.</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p>Yes <b>C 2.8</b></p>
<p>On vessel monitoring and assessment of dredge material by a maritime archaeologist and Traditional Custodians</p>	<p>F: No. Human interaction with dredge material to be kept to a minimum for safety. Some vessels also have limited vessel capacity, particularly where on-vessel accommodation is required, which are already allocated to essential operational and safety crew.</p> <p>CS: Additional costs of engaging a maritime archaeologist and Traditional Custodians</p>	<p>Due to sediment volumes, this method is considered unlikely to allow effective monitoring of dredge material.</p>	<p>Not assessed, control not feasible.</p>	<p>No</p>
<p>Unexpected finds of potential Underwater Cultural Heritage<sup>20</sup> sites / features, including first nations UCH are managed in accordance</p>	<p>F: Yes</p> <p>CS: Costs of implementation</p>	<p>Allows management of new finds in accordance with legislative requirements</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p>Yes <b>C 2.10</b></p>

<sup>19</sup> Gilmour et al (2016) states that the primary period of spawning for the region is in autumn. Autumn coral spawning CWES are defined as the 10 day period, five to 15 days after the predicted full moon in March and/or April, which is based on studies that have found that the majority of broadcast spawning species in Mermaid Sound spawn during neap tides approximately one week after the full moon (Gilmour et al. 2016). Spring coral spawning CWES are defined as the 10 day period, one to 11 days after the predicted full moon in November, which is based on studies that have demonstrated that *Porites lutea* spawns during spring tides predominantly 3 days after the full moon (Stoddart et al. 2012; Baird et al. 2011).

<sup>20</sup> Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act.

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
with an Unexpected Finds Procedure set out in Section 7.7		(including <i>Underwater Cultural Heritage Guidance for Offshore Developments</i> and the <i>DRAFT Guidelines to Protect Underwater Cultural Heritage</i> under the <i>UCH Act</i> ), expert advice and community expectations.		
Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH and requirement to follow the Unexpected Finds Procedure (C2.12)	F: Yes CS: Minimal	Ensures workforce are suitably aware of legal and process requirements for managing cultural features and heritage values. And is in line with recommendation from Mott (2019).	Benefits outweigh cost/sacrifice.	Yes <b>C 2.11</b>
Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, <i>Underwater Cultural Heritage Act 2018</i> and the ATSIHP Act	F: Yes CS: Minimal	Meets legislative requirements and community expectations.	Benefits outweigh cost/sacrifice.	Yes <b>C 2.12</b>
<b>Professional Judgement – Eliminate</b>				
No additional controls identified.				
<b>Professional Judgement – Substitute</b>				
Alternative location to the Offshore Borrow Ground in Commonwealth waters	F: No. Geotechnical studies have shown that the Offshore Borrow Ground is the most suitable location to source sand backfill material. Other areas contain a higher percentage of fines. CS: Not assessed control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Re-use of the trunkline trenched material	F: No. This option is not considered feasible. Woodside does not have a requirement for additional land area within its leases. Beach nourishment is not relevant to the coastal habitats of the Dampier Archipelago. Material	Not assessed, control not feasible.	Not assessed, control not feasible.	No
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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
	contains too many fines and not enough coarse material to be acceptable for reuse as backfill. CS: Not assessed control not feasible.			
Onshore disposal of unsuitable backfill material	F: Yes. It is possible to dispose of unsuitable backfill material onshore. CS: Significant cost would be involved in transiting material (e.g. additional vessels, fuel use, resources etc.). Would require additional time and presents additional risks (e.g. vessels use / transiting). Material would have to be disposed of at an onshore location which would require significant infrastructure set up.	Would negate the requirement to dispose of unsuitable backfill material in Spoil Ground 5A. However little environmental benefit as Spoil Ground 5A has previously been used for material disposal (Pluto trunkline) and there would be little to no environmental benefit of disposing of the material onshore.	Cost/sacrifice outweighs the benefit gained.	No
<b>Professional Judgement – Engineered Solution</b>				
Overflow funnels on the TSHD fitted with 'green valves'	F: Yes. Overflow funnels can be fitted with green valves. CS: A moderate level of costs is expected to fit the green valves in comparison to the base case.	These valves restrict the entrainment of air into the overflow mixture thereby minimising fines dispersal and associated turbidity. Further, the overflow material sinks more rapidly due to density effects allowing better settlement of overflow material.	The additional cost is considered acceptable considering the associated environmental benefit.	Yes <b>C 2.7</b>
Use of a drag head skirt on the TSHD	F: Yes. It is possible to install a skirt on the drag head. CS: Additional cost is required to install a skirt on the drag head.	Installing a drag head skirt will reduce the turbidity within the water column when dredging material. However given the low sensitivity surrounding environment and low risk to water quality (see modelling), benefit is marginal and would not significantly further reduce the risk.	Cost/sacrifice outweighs the benefit gained.	No

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
Spoil disposal to seabed via reverse pumping through TSHD drag head to seafloor	F: Yes. It is possible to reverse pump material to the seabed through the drag head. CS: Additional time is required to reverse pump. Given the volumes required to be disposed of in Spoil Ground 5A there is a significant cost.	Reverse pumping through the drag head may reduce the turbidity within the water column. However given the low sensitivity surrounding trench location environment and low risk to water quality (see modelling), benefit is marginal and would not significantly further reduce the risk.	Cost/sacrifice outweighs the benefit gained.	No
<p><b>ALARP Statement</b></p> <p>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 dredging (trenching and borrow ground), spoil disposal and backfill. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.</p>				

<b>Demonstration of Acceptability</b>
<p><b>Acceptability Criteria and Assessment</b></p> <p>The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5):</p> <ul style="list-style-type: none"> <li>• Overall impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>• EPOs and controls in the Scarborough OPP that are relevant to seabed disturbance have been adopted.</li> <li>• There are no changes to internal/external context specific to this risk from the Scarborough OPP. Following consultations with DNP on the potential risks to AMPs, the DNP noted it has no objections and claims at this time. Impacts from trenching, spoil disposal, borrow ground dredging and Trunkline backfill was raised during stakeholder consultation (Appendix F, Table 1) and these were considered in the finalisation of the EP.</li> </ul>
<p><b>Acceptability Statement:</b></p> <p>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 and stakeholder expectations. Woodside has undertaken a desktop assessments by qualified professionals, using remote sensing techniques, to identify known or potential underwater cultural heritage have been undertaken (refer to Section 4.9.1) and an unexpected finds procedure will be implemented (C 2.10). Therefore, the activity is not inconsistent with Underwater Cultural Heritage Guidance for Offshore Developments and the DRAFT Guidelines to Protect Underwater Cultural Heritage under the UCH Act. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of seabed disturbance to a level that is broadly acceptable.</p>

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 3</b> 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.</p> <p><b>EPO 4</b> Undertake activities within the borrow ground to not harm or cause destruction to the sea floor habitats (including significant areas of sponge habitat) of the Dampier AMP Habitat Protection Zone.</p>	<p><b>C 2.1</b> Comply with in force Sea Dumping Permit (No. SD2019/3982 or amended), which includes the following:</p> <ul style="list-style-type: none"> <li>Contractor must only dump within the disposal site.</li> <li>Contractor must ensure the dredged material is dumped in a manner over the disposal site to minimise mounding from dumping activities.</li> <li>Contractor must establish by GPS that, prior to dumping, the vessel is within the disposal site.</li> </ul>	<p><b>PS 2.1.1</b> Dredged material from the trench is not placed outside of approved spoil ground.</p>	<p><b>MC 2.1.1</b> Dredge vessel logs show vessel positioned in designated spoil ground prior to, and during activity (as determined by GPS).</p>
		<p><b>PS 2.1.2</b> Bathymetric survey of the disposal site is undertaken by a suitably qualified person:</p> <ul style="list-style-type: none"> <li>prior to the commencement of dumping activities under this permit; and</li> <li>within 1 month of the completion of all dumping activities authorised under this permit.</li> </ul>	<p><b>MC 2.1.2</b> Records demonstrate completion of survey by a qualified person.</p>
<p><b>EPO 5</b> Undertake the Petroleum Activities Program in a manner that ensures no displacement of marine turtles from habitat critical during nesting and interesting periods and marine turtles' biologically important behaviour can continue in biologically important areas.</p> <p><b>EPO 6</b> 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.</p> <p><b>EPO 27</b> No detectable net reduction of live coral cover at coral impact</p>	<p><b>C 2.2</b> Implement the water quality monitoring program and Tiered Monitoring and Management Framework to manage water quality associated with Commonwealth dredging, spoil disposal and backfill activities to avoid reversible impacts to coral communities as the most sensitive receptor in Ecological Zone B and sponges in the Offshore Zone.</p>	<p><b>PS 2.2.1</b> In the event of a Tier 1 Project attributable trigger exceedance, water quality data reviewed and based on trend analysis continuous improvement opportunities implemented where practicable.</p>	<p><b>MC 2.2.1</b> Records of data and trend analysis review.</p>
		<p><b>PS 2.2.2</b> In the event of a Tier 2 Project attributable trigger exceedance, responsive management actions implemented to reduce turbidity associated with dredging activities below Tier 2 level.</p>	<p><b>MC 2.2.2</b> Monitoring results demonstrate water quality below Tier 2 level at affected site.</p>
		<p><b>PS 2.2.3</b> In the event of a Tier 3 Project attributable trigger exceedance, contingency management actions implemented to reduce turbidity associated with dredging activities below Tier 2 level.</p>	<p><b>MC 2.2.3</b> Monitoring results demonstrate water quality below Tier 2 level at affected site.</p>
	<p><b>C 2.3</b> A 250 m buffer zone will be implemented between the offshore borrow ground and the Dampier AMP</p>	<p><b>PS 2.3</b> The TSHD drag head will not be positioned on the seabed within the 250 m of the Dampier AMP boundary .</p>	<p><b>MC 2.3.1</b> Dredging logs demonstrate the TSHD drag head location</p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
monitoring locations attributable to the Petroleum Activities Program. <b>EPO 31</b> No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit <sup>21</sup> .	<b>C 2.4</b> TSHD draghead will be positioned (using DGPS) within approved footprints prior to and during trenching, borrow ground dredging and backfill activities	<b>PS 2.4</b> No dredging to occur outside of approved footprints	<b>MC 2.4.1</b> Dredging logs show that the TSHD drag head was positioned within approved footprints prior to and during dredging activities
	<b>C 2.5</b> THSD overflow pipes to be raised prior to spoil or backfill transport.	<b>PS 2.5</b> THSD overflow pipes raised to minimise losses through overflow during transport	<b>MC 2.5.1</b> Records demonstrate overflow pipes are raised prior to spoil or backfill transport.
	<b>C 2.6</b> TSHD hopper door seals will be inspected prior to mobilisation.	<b>PS 2.6</b> TSHD hopper door seals confirmed in good working order prior to mobilisation	<b>MC 2.6.1</b> Records of hopper door seal inspection
	<b>C 2.7</b> Overflow funnels on TSHD fitted with 'green valves'	<b>PS 2.7</b> Green valves fitted and used during overflow for the duration of the dredging activity	<b>MC 2.7.1</b> Inspection shows green valves installed on overflow funnel
	<b>C 2.8</b> For Borrow Ground dredging during coral spawning critical window/s of environmental sensitivity (CWES) TSHD to either: <ul style="list-style-type: none"> <li>• operate with no overflow;</li> <li>• OR where this is not possible</li> <li>• suspend borrow ground dredging</li> </ul> Coral spawning CWES dates related to the activity are defined below <sup>22</sup> : <ul style="list-style-type: none"> <li>• 28 November to 7 December 2023; (full moon 27 November)</li> <li>• 30 March to 8 April (full moon 25 March 2024)</li> </ul>	<b>PS 2.8</b> During confirmed coral spawning CWES controls in place to reduce turbidity generating activities during Borrow ground dredging.	<b>PS 2.8.1</b> Records demonstrate no borrow ground dredging occurs without controls in place to reduce turbidity.
	<b>C 2.9</b> Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the Operational	<b>PS 2.9</b> Where an object or Significant Aboriginal Area is protected by a declaration under Section 12 or Sections 9/10 respectively of the	<b>MC 2.9.1</b> No non-compliances with any protection declarations relevant to the Operational Area,

<sup>21</sup> Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

<sup>22</sup> Gilmour et al (2016) states that the primary period of spawning for the region is in autumn. Autumn coral spawning CWES are defined as the 10 day period, five to 15 days after the predicted full moon in March and/or April, which is based on studies that have found that the majority of broadcast spawning species in Mermaid Sound spawn during neap tides approximately one week after the full moon (Gilmour et al. 2016). Spring coral spawning CWES are defined as the 10 day period, one to 11 days after the predicted full moon in November, which is based on studies that have demonstrated that Porites lutea spawns during spring tides predominantly 3 days after the full moon (Stoddart et al. 2012; Baird et al. 2011).

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	Area, under Sections 9,10,12 of the ATSIHP Act	ATSIHP Act, no work inconsistent with that declaration will be conducted for the duration of that declaration.	under Sections 9,10,12 of the ATSIHP Act
	<b>C 2.10</b> Unexpected finds of potential Underwater Cultural Heritage <sup>23</sup> sites / features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in Section 7.7	<b>PS 2.10</b> In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure set out in Section 7.7.	<b>MC 2.10</b> No non-compliance with the Unexpected Finds Procedure.
	<b>C 2.11</b> Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (C2.12)	<b>PS 2.11</b> Relevant vessel crew (including ROV operators) are made aware of the requirements of the Unexpected Finds Procedure (C2.12) through an induction.	<b>MC 2.11</b> Records demonstrate vessel crew are made aware of potential to encounter UCH.
	<b>C 2.12</b> Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, <i>Underwater Cultural Heritage Act 2018</i> and the ATSIHP Act	<b>PS 2.12</b> Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (Section 7.7) including to: <ul style="list-style-type: none"> <li>• WA Museum as requested during EP consultation</li> <li>• Australasian Underwater Cultural Heritage Database</li> </ul>	<b>MC 2.12</b> Records of potential UCH finds reported to relevant authorities and stakeholders.

<sup>23</sup> Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act



### 6.7.3 Physical Presence – Seabed Disturbance (Intervention and Trunkline Installation)

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.1.6 – Seabed Disturbance														
Context														
<b>Relevant Activities</b> Seabed Intervention Activities – Section 3.9 Trunkline Installation Activities – Section 3.11 Contingent Activities – Section 3.13				<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Physical Environment – Section 4.4 Habitats and Biological Communities – Section 4.5				<b>Stakeholder consultation</b> 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
Trunkline & ancillary structure(s) installation		✓	✓		✓	✓	✓	A	D	-	-	LCS GP PJ	Broadly Acceptable	EPO 3 ,5 ,6 ,7 ,8 ,9, 28, 31
Pipeline and infrastructure crossing support		✓	✓		✓	✓	✓	A	D	-	-			
Span rectification		✓	✓		✓	✓	✓	A	E	-	-			
PLET & Foundations installation		✓	✓		✓	✓	✓	A	E	-	-			
Continental slope crossing seabed preparation		✓	✓		✓	✓	✓	A	D	-	-			
Geotechnical surveys		✓	✓		✓	✓	✓	A	E	-	-			
ROV operations near the seabed		✓	✓		✓	✓	✓	A	E	-	-			
Underwater acoustic positioning		✓	✓		✓	✓	✓	A	D	-	-			
Description of Source of Impact														
This section assesses potential impacts from seabed disturbance resulting from Trunkline and ancillary structure(s) installation, pipeline and infrastructure crossings, other intervention works including continental slope excavation, PLET and foundations installation, ROV and survey activities.														
<b>Trunkline Installation</b> The Trunkline is dual diameter, with the diameter between the State Waters boundary and ~KP200 being nominal 36" and the remainder of the Trunkline to the FPU being nominal 32" diameter. From the shore to around ~KP160, the Trunkline will be routed alongside the existing Pluto gas trunkline (about 100 m to the south). Other structures installed by the PV (welded into the Trunkline during the normal lay process) include an in-line tee, two hot tap tees, foundations and ancillary structures. The disturbance footprint from installation of the Trunkline and other structures is expected to be approx 30m wide, along the Trunkline installation corridor.														
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A SWLB will install the nearshore section of the Trunkline up to around the State Waters boundary, however activities with this vessel may extend for a short distance into Commonwealth waters before handover to the PV. Anchoring will be required to moor the SWLB. Anchors will be moved as required via anchor handling tugs to move the SWLB along the trunkline route. During anchoring the seabed will be disturbed by the vessel anchor mooring system, including placement of anchors and chain/wire along the seabed, potential dragging during tensioning and recovery. Anchoring will occur within the Trunkline Project Area, up to 800 m either side of the trunkline and for approximately 3 km into Commonwealth Waters (1600 m x 3 km for anchoring footprint).

The PV may be required to temporarily moor on location via its anchor, in the case of a contingency scenario. This would be done within the Operational Area, away from subsea assets to prevent damage.

**Pipeline and Infrastructure Crossings**

The Trunkline route crosses existing subsea infrastructure including pipelines, flexible flowlines, umbilicals and fibre optic cables, which will require the installation of crossing supports. Three crossings lie within the Montebello AMP Multi Use Zone (Figure 3-2).

Indicative options for possible crossing supports and volumes are presented in Table 6-5. Possible crossing supports include rock berms (Section 3.9.6.1) and concrete mattresses (Section 3.9.6.2). A test dump may be carried out prior to rock berm installation within the Trunkline Project Area in a location free from existing infrastructure and not within the direct line of the trunkline route. The direct disturbance footprint will be determined by the length, number and height of the rock berms. Seabed disturbance associated with pipeline and infrastructure crossings may be over 30 m at the base for the centre rock berms, while at the tail ends of the crossings the footprint is reduced to only the pipeline width. Some settling of material may also occur wider than 30 m corridor. Where concrete mattresses are used, they will be installed either side of the existing subsea infrastructure. Typical concrete mattresses are 6 or 8 m by 3 m, with a thickness and stacking arrangement to suit the required span height, however they could be larger. This will be dependent on final design and seabed topography.

**Table 6-5: Pipeline and infrastructure crossings**

Crossing	KP	Support type <sup>1</sup>	Indicative Length <sup>2</sup> (m)	Indicative Width <sup>2</sup> (m)	Indicative Area <sup>2</sup> (m <sup>2</sup> )
Reindeer Pipeline (Santos)	75	Rock berm	800	21	16,800
Fibre Optic Cable 1 (Telstra)	136	Rock berm	300	15	4,500
Fibre Optic Cable 2 (Telstra)	150	Rock berm	300	15	4,500
Wheatstone Pipeline (Chevron)	191	Rock berm	400	25	10,000
Julimar Brunello Pipeline	192	Rock berm	600	21	12,600
Pluto Pipeline	194	Rock berm	500	21	10,500
Pyxis Pipeline	212	Concrete mattresses	60	20	1,200
<b>Total</b>					60,100

Note 1: Subject to final design

Note 2: Indicative only

**Span Rectification**

Span rectification (Section 3.10) may be required through the installation of structures, such as:

- concrete mattresses (typically 6 or 8 m x 3 m)
- grout bags (typically 200 kg to 2000 kg)
- rock installation
- seabed levelling and excavation (e.g. dredging using TSHD, mass flow excavators and jetting).

**PLET & Foundations Installation**

PLET foundations will be installed by a construction vessel and ROV. The PV will install the PLET at the end of the Trunkline and position it on top of pre-installed foundations (as described in Section 3.11.4). Scour mattresses may also be installed. Localised permanent seabed disturbance will be confined to the footprint of the PLET and foundations, as well as temporary disturbance and resuspension of sediments during ROV operations.

**Continental Slope Crossing Seabed Preparation**

The Trunkline along the continental slope requires seabed preparation to prevent excessive bending movements in the Trunkline and associated free span lengths where excavation will take place in water depths ranging between 550 m and 650 m (Section 3.9.5). At about KP 209 of the Trunkline route, seabed material will be excavated and/or displaced

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over a length of approximately 150 m within a 300 m corridor (excluding placement of excavated material), which will allow appropriate pipeline span lengths. Approximately 5,000 – 15,000 m<sup>3</sup> of material may be excavated to allow for safe pipelay operations.

The primary method of excavation is planned to be undertaken using an ROV controlled large volume grab (as described in Section 3.9.5). Secondary options to achieve the excavation profile are methods such as: mass flow excavation, conventional ROV dredging tooling and/or jetting to create the required trench.

For the primary method, several options for lateral movement of the material are considered. These include the use of a winch connected to a clump weight offset from the trunkline centreline; the use of a connected hose system to the grab; and by vessel navigation whereby a construction vessel is moved between excavated area and adjacent material placement location for each grab cycle; or a combination of these methods. Selection of lateral movement method(s) is subject to engineering in context of the local soils and confirmation of a stable permanent side slope angle.

Typically, the seabed footprint for the placement of excavated material is 100 m to 500 m from the trunkline centreline either side. In the case of free vessel navigation, material placement location may be up to 1 km from the trench centre line. Material will be placed parallel to the trench in an area not exceeding 0.10 km<sup>2</sup>, based on an indicative area of 200 m by 200 m on either side, including the placement of a clump weight.

The final position of excavated materials may overflow beyond proposed seabed footprint due to fluidisation of the already very soft soils in the trench profile. This is unavoidable given the soil properties. It is expected sediments will settle further afield due to hydrographic conditions. A portion of the material excavated will end up dispersed in the water column with particles settling out away from the excavated area as a result of current and gravity, typically moving material down gradient. Any undulation as a result of excavation and spoil disposal is expected to be smoothed over time due to hydrographic conditions.

#### **Geotechnical Surveys**

Geotechnical surveys to confirm the seabed sediments (typically involving in situ testing and piston/push sampling) may be required to collect data to inform installation activities (see Section 3.9.1). Seabed disturbance can result from placing survey equipment on the seafloor, or when collecting seabed samples and will be <1 m<sup>2</sup>. These activities will only occur within the Trunkline Project Area.

#### **Underwater Acoustic Positioning**

Accurate positioning of mattresses, rock berms or structures 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 3.8.4). A beacon will be deployed for LBL acoustic positioning, which is generally attached by hydrostatic release to a clump weight (approximate footprint of <1 m<sup>2</sup>), allowing for recovery. If clump weights are used, they will be recovered.

#### **ROV Operations**

The use of an ROV is required during various Petroleum Activities Program activities (e.g., pre and post lay surveys, rock berms etc.) (see Section 3.8.3). 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<sup>2</sup>). It is noted that potential use of an ROV for continental slope crossing seabed preparation is addressed above.

#### **Contingency Activities**

Rock berms installed for infrastructure crossings may require rework by adding rock volume to reinstate berm height, width or slope angles using the RIV. Once the trunkline has been installed, sections may require de-burial in the event of a fault (or suspected fault) (Section 3.13.10). In the continental slope excavation area, re-profiling may also be required in case slumping/deterioration of the trench profile has occurred over time.

Equipment, materials or tools may need to be wet parked on the seabed in the Operational Area during installation of the trunkline. This could include, but not be limited to, work baskets for ROV tools, pig launcher/receiver prior/after connection to the PLET, scour mattresses etc.

#### **Seabed Disturbance Summary**

Table 6-6 provides details on the expected and maximum total seabed disturbance from Trunkline installation, pipeline and infrastructure crossings, other intervention works including continental slope excavation. All disturbance will occur within the Trunkline Project Area.

As detailed within Section 7.1.6.1 of the Scarborough OPP (SA0006AF0000002, Rev 5), the maximum allowable disturbance area of 12.9 km<sup>2</sup> is based on an indicative trunkline disturbance corridor width of 30 m, encompassing the trunkline for the entire 430 km (of which about 400 km are in Commonwealth waters). This is considered a conservative disturbance estimate, as while there will be a few locations along the trunkline route where seabed disturbance extends wider than 30 m (e.g. slope crossing), the average width of seabed disturbance across the entire trunkline route is expected to be less than 30 m.

Approximately 83 km of trunkline will extend into Montebello AMP between KP 109 and KP 192, equating to approximately 2.48 km<sup>2</sup> overlap (allowing for a 30 m disturbance area on the trunkline). Surveys (Sections 3.9.1 and 3.11.1) pipeline and infrastructure crossing (Section 3.9.6) and span rectification activities (Section 3.10) may be undertaken within the AMP as part of the Petroleum Activities Program.

**Table 6-6: Trunkline installation and associated activities seabed disturbance summary (Commonwealth waters)**

Activity	Description	Expected disturbance area (km <sup>2</sup> )	Maximum allowable disturbance area (km <sup>2</sup> )
Trunkline installation	Trunkline on seabed and ancillary structures	2.07	11.46 <sup>1</sup>
	Pipeline and infrastructure crossings (see summary above)	0.06	
	Continental slope crossing seabed preparation (and material placement)	0.10	

*Note 1: This value has been amended to account for Commonwealth waters only (e.g. 400 km trunkline) and to remove potential duplication associated with trenching, spoil disposal and backfill between KP32 and KP50 which has been allowed for in Section 6.7.2.*

**Detailed Impact Assessment**

**Assessment of Potential Impacts**

Seabed disturbance has the potential to result in the following impact(s):

- a change in habitat
- a change in water and sediment quality.

Which may have the following further impacts

- injury and/or mortality to fauna.

These are described in full in Section 7.1.6 of the Scarborough OPP (SA0006AF0000002, Rev 5), with no additional impacts identified for this EP. Where activities are consistent with those described in the Scarborough OPP, this section provides a summary of the assessment outcomes in the context of the Petroleum Activities Program covered by this EP. Where additional definition in relation to risks and impacts are available, this section provides additional detail as part of the impact assessment.

**Water and Sediment Quality**

The installation of the subsea infrastructure, including the trunkline and PLET/foundations; span rectification and pipeline and infrastructure crossings (e.g. rock berms, mattresses); and anchors for the SWLB (if required) will result in temporary and localised displacement of surface sediments within the Trunkline Project Area. The displacement of naturally occurring sediments from these activities is likely to result in highly localised (within tens of metres of the disturbance area) and low level increases in turbidity at the seabed that will quickly disperse in the oceanic marine environment due to prevailing hydrodynamic conditions. Any reduction in water quality is likely to be temporary, and limited to the waters close to the seabed immediately surrounding the disturbance area. The resulting low levels of sediment deposition are likely to be naturally reworked into surface sediment layers through bioturbation.

Continental slope crossing seabed excavation will result in sediment mobilisation from displacement/relocation of sediments along the trunkline at approximately KP 209, subsequently resulting in a localised and temporary change in water quality. Sediments of the continental slope are typically soft sediments and mud, and as such excavated materials may overflow beyond proposed seabed footprint due to fluidisation of the already very soft soils in the trench profile. It is expected a portion of the material excavated will end up dispersed in the water column with finer particles likely to settle further afield due to hydrographic conditions, typically moving material down gradient. The short term nature of the activity means that elevations in turbidity at depth is likely to be temporary in nature and rapidly return to background levels.

Potential impacts to benthic habitats, including the values of AMPs and KEFs along the trunkline route are evaluated below.

Impacts from seabed disturbance on water and sediment quality will be slight. Receptor sensitivity of water and sediment quality is low (low value, open water), and therefore the Impact Significance Level of seabed disturbance on water and sediment quality is **Negligible (F)**.

**Epifauna and Infauna**

Seabed disturbance and potential impacts to epifauna and infauna will occur as a result of the mobilisation and/or displacement of sediments along the trunkline and placement of infrastructure. Disturbance to the seabed can alter the physical seabed habitat conditions, resulting in epifauna and infauna community changes (Newell et al., 1998). Potential impacts include:

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- Direct impacts, including physical removal and irreversible loss of benthic communities and habitat and temporary alteration of the existing hydrodynamic regime within the direct footprint of activities.
- Indirect impacts caused by reduced water quality or increased sedimentation, including indirect effects on filter feeder-sponge habitat through reduced light availability for photosynthesis of the sponges' symbionts and reduced filtering and feeding (Abdul Wahab et al., 2019).

The installation of the subsea infrastructure, including the trunkline; and PLET/foundations; span rectification and pipeline and infrastructure crossings (e.g. rock berms, mattresses); and anchors for the SWLB (if required) will result in permanent and localised loss of epifauna and infauna over the infrastructure footprint. As detailed in Section 4.5.2, the Trunkline Project Area is not expected to support abundant or diverse benthic communities, and those that are present are considered typical of the North West Shelf.

In the long term, the trunkline, PLET and foundations, span rectification and infrastructure crossing materials will provide hard substrate to the marine environment for the duration of the activity, which may support epifaunal communities. Habitats and the species present on these types of structures in the NWS of Western Australia have been subject to detailed assessment by McLean et al. (2020), McLean et al. (2018), Bond et al. (2018) and McLean et al. (2017). These habitats not only have structural complexity but also create habitat for a large diversity of fish species that commonly occur elsewhere in the NWS but do not occur over soft unconsolidated sediments.

**KP 32 to KP 50:** Between the State waters boundary (KP 32) and ~KP 50, the trunkline will be installed within the pre-excavated trench. Potential impacts associated with trenching, spoil disposal, borrow ground dredging and backfill are evaluated in Section 6.7.2. The trunkline will therefore be laid in a pre-disturbed area and additional disturbance is not anticipated.

**KP 50 to KP 109:** As described in Section 4.5.2, the seabed between KP 52.5 and KP 109 is generally featureless with occasional areas where the underlying calcarenite is intermittently exposed that may support patches of benthic filter feeder communities. The calcarenite outcrops generally run perpendicular to the trunkline and are spread widely over the North West Shelf (Wilson, 2013). Any intersections of the isolated calcarenite outcropping identified from the geophysical data represent a very small area (<0.01km<sup>2</sup>), given the 36 inch diameter of the pipeline. The magnitude of impact to epifauna and infauna within this portion of the Trunkline Project Area will be minor given the localised footprint of disturbance and associated temporary increase in turbidity

**KP 109 and KP 192 (Montebello AMP):** The trunkline route intersects the Montebello AMP between KP 109 and KP 192, however the seabed along the South East corner of the Montebello Islands Australian Marine Park between KP 109 and KP 145 is generally featureless, with some calcarenite outcrops intersecting the trunkline route from KP 117.7 (Section 4.5.2). Keesing (2019) showed that the topography in the vicinity of the Scarborough trunkline is predominantly flat bottom with some occasional bioturbated areas, and the substrate is typically fine sands. These sites within the vicinity of the Scarborough trunkline had low numbers of sponges, whips and gorgonians and as a result, complex benthic filter feeder communities were largely absent. From KP 145 to KP 192 the seabed starts off generally featureless with the exception of some small depressions. From approximately KP 173 the calcarenite exhibits subtle northeast-southwest oriented lineations observed in the bathymetry, but a veneer of sediment is thought to cover these outcrops. An ROV survey of the trunkline route within the Montebello AMP conducted in 2019 (Advisian 2019b) found the area in which the trunkline intersects the North West section of the Montebello AMP to be characterised by bare sandy sediments, interspersed with predominantly sparse benthic communities and epifauna. Denser areas of filter feeders were observed in areas identified from the bathymetry as having a more complex seabed structure, refer to Area 5 in Table 4-5. Though this area did not cross the trunkline route. In addition these areas of filter feeding benthos (sponges, soft corals, gorgonians, hydroids, sea pens, crinoids) are widely representative of benthos found both within the AMP (Advisian, 2019a) and regionally (refer to Section 4.5.2).

Potential impacts to epifauna and infauna from trunkline installation within the Montebello AMP are minor based on the localised area of disturbance from installation of the 36 inch diameter pipeline and associated infrastructure crossing/span rectification supports.

Potential impacts to the values of the AMP are evaluated further in the AMP section below.

**KP 192 to Continental Slope:** From KP 192 to the continental slope the seabed is generally featureless (Section 4.5.2). Epifauna was observed by ROV footage to be most abundant on the continental shelf compared to the slope and the abundance of the fauna appeared to be inversely associated with depth, with distinct differences in the fauna on the shelf and slope. Soft sediment benthic communities are dominated by infauna (including molluscs, crustaceans and worms) and isolated larger fauna (free swimming cnidarian, demersal fish and benthic crustaceans) and therefore negligible impacts are expected from the installation of the trunkline.

Continental slope crossing seabed preparation at approximately KP 209 is expected to result in direct impacts to epifauna and infauna within the excavation footprint and area of material relocation. Given the sediment characteristics, which consist of very soft clay layer overlying a loose silty sand deposit, some of fines mobilised during the seabed preparation activity are also likely to disperse further afield. Based on the geotechnical properties, some excavated sediment placed in the designated areas may relocate down-gradient, similar to natural relocation of sediments in this area. These temporary elevations in turbidity and subsequent sediment deposition have the potential to indirectly affect filter feeder-sponge habitat through smothering. Given the volume and soil type (soft sediments and mud), minor elevations in turbidity are expected near the seabed, with low levels of sediment deposition further afield. Based on ROV transects undertaken in the area (Advisian, 2019a), the seabed within the KP 209 area is expected to be

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predominantly bare sand habitat with a sparse coverage of epibenthic organisms, such as heterotrophic sponges and soft corals.

Rock pinnacles have been observed approximately 3 km from the slope crossing seabed preparation location, at KP 209, as shown in Figure 4-6 and Figure 4-7. However, impacts from turbidity on species associated with these formations are not expected given the distance and that the pinnacles are located upslope of the trunkline whereas sediments are expected to deposit downslope.

Impacts from seabed disturbance on epifauna and infauna along the trunkline between KP 192 and across the continental slope will be minor based on the localised footprint of disturbance and temporary elevations in turbidity associated with the slope crossing seabed preparation activity. Receptor sensitivity of epifauna and infauna is low (low value, homogenous).

Impacts to the values of the Continental Slope Demersal Fish Communities KEF, which intersects the continental slope crossing seabed preparation area, are evaluated below.

**Deep Continental Slope to PLET:** Seabed material along the proposed Trunkline Project Area in deeper waters (and around the PLET location) is predominantly flat and featureless and comprises thick, unconsolidated fine-grained sands, supporting sparse marine fauna as reported for the Exmouth Plateau (Section 4.5.2). Impacts from seabed disturbance in the deep continental slope and out to the PLET location will be minor given the localised footprint of disturbance and low receptor sensitivity.

### **Marine Turtles**

Five species of marine turtle may occur in the Trunkline Project Area: flatback, green, hawksbill, loggerhead and leatherback turtles. The Trunkline Project Area overlaps internesting habitat critical and BIAs (internesting buffer) for flatback, green and hawksbill turtles around the Dampier Archipelago and Montebello Islands (Section 4.6).

The Recovery Plan for Marine Turtles in Australia (DoEE, 2017) identifies habitat modification from infrastructure/coastal development as a threat to the stocks of flatback, green, and hawksbill turtles in the North West Shelf and Pilbara region.

Based on the defined 30 m width of the indicative Trunkline disturbance area, the areas of overlap with the habitat critical to each species of marine turtle are as follows:

- Flatback turtle: habitat critical – overlap area 5.17 km<sup>2</sup>; 0.012%.
- Green turtle: habitat critical – overlap area 0.62 km<sup>2</sup>; 0.013%.
- Hawksbill turtle: habitat critical – overlap area 0.62 km<sup>2</sup>; 0.013%.

Potential impacts to turtles from dredging, spoil disposal and backfill activities are assessed in Section 6.7.2. Impacts from seabed disturbance during trunkline installation and associated activities will be highly localised and temporary in nature. It is unlikely that internesting turtles will occur in the Trunkline Project Area near the Montebello Islands, where water depths range between 46 m to 214 m (as described in Section 6.7.2). These deep, offshore waters at the furthest extent of the internesting buffer habitat critical are not likely to represent important internesting habitat, as described in Section 6.7.2. Therefore, seabed disturbance within the Trunkline Project Area near the Montebello Islands is not expected to displace turtles from the internesting buffer habitat critical.

Whilst the Trunkline Project Area adjacent to the Dampier Archipelago overlaps internesting buffer habitat critical for flatback, green and hawksbill turtles (refer Figure 4-10), the extent of overlap between the defined 30 m width of the indicative Trunkline disturbance area and these habitat critical areas is extremely low (<0.02% - see above). The shallowest point of the Trunkline Project Area occurs in waters adjacent to the Dampier Archipelago (approximately 30 m depth), and internesting flatback, green and hawksbill turtles are unlikely to utilise the habitats at these depths. Therefore, seabed disturbance within the Trunkline Project Area adjacent to the Dampier Archipelago is not expected to adversely impact on biologically important behaviours or biologically important habitat, including habitat critical to the survival of marine turtles. The Operational Area is not likely to represent important internesting habitat for flatback, green and hawksbill turtles, and any displacement of individuals from areas utilised as foraging habitat will not result in any significant impacts at a population level.

Impacts from seabed disturbance on marine turtles will be slight. Receptor sensitivity of marine turtles is high, and the Impact Significance Level of seabed disturbance on marine turtles is **Minor (D)**.

### **Australian Marine Parks**

The Trunkline Project Area intersects the Montebello AMP (Multiple Use Zone (VI)) between KP 109 to KP191. This equates to an approximate 2.48 km<sup>2</sup> overlap (allowing for a 30 m disturbance area for the trunkline). This conservative disturbance area represents 0.07% of the Montebello Marine Park, including the area intersecting the Ancient Coastline KEF. Between KP 109 and KP 160 the trunkline will be routed alongside the existing Pluto gas trunkline (about 100 m to the south). The trunkline will be nominal 36 inches in diameter and will be installed by the DP PV through the Montebello AMP, therefore no mooring will be required.

A description of the epifaunal communities in the Montebello Islands AMP is provided in Section 4.8. The trunkline intersects an area of sparse epifauna in the South Eastern section of the AMP and intersects areas of slightly more abundant and diverse epifauna in the North Western section of the AMP (Advisian 2019a and 2019b, Keesing 2019). However these areas are typical of the benthos found both within the marine park and regionally. Benthic organisms (including sponges and soft corals) generally occur as single or low density aggregations of individuals with isolated

denser areas of sponges in areas identified from the bathymetry as having a more complex seabed structure (Advisian, 2019b).

The pipeline alignment was selected to ensure the intersections with harder more complex areas of seabed are minimised with the pipeline generally running perpendicular to these areas. This minimises any direct loss of sponges which are generally associated with these areas of more complex bathymetry in the Montebello AMP. The majority of the trunkline route within the Montebello AMP will also run adjacent to the existing Pluto trunkline ensuring there is minimal disturbance to new areas of the AMP. The trunkline route has also been selected to minimise the seabed disturbance, with alternative options requiring additional seabed intervention (refer to Section 4.5 and 4.6 of the Scarborough OPP).

Three infrastructure crossings lie within the Montebello AMP Multiple Use Zone, which will require the use of rock berms (refer to Section 3.9.6.1). The expected average footprint for seabed disturbance associated with infrastructure crossing materials is the 30 m disturbance corridor, however in some sections may be narrower or wider.

Given that epifaunal communities are well represented either side of the proposed trunkline route (Advisian 2019) and regionally (Keesing 2019) and that the footprint of the trunkline is extremely small in comparison with the spatial extent of these communities in the North Western section of the Montebello AMP, the presence of the trunkline will not destroy, fragment, or isolate these communities. Nor will it disturb a substantial area of habitat given the narrow footprint of the trunkline. In the long term, the trunkline and crossing materials will provide hard substrate to the marine environment for the duration of the activity, which may support epifaunal communities (McLean et al. 2020; McLean et al. 2018; Bond et al. 2018; McLean et al. 2017).

The North-west Marine Parks Network Management Plan (DNP, 2018a) lists natural values of the Montebello AMP as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act, as well as BIAs that include seasonal breeding habitat for seabirds, internesting, foraging, mating, and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks. Of those listed, the most susceptible species to seabed disturbance are marine turtles.

Relevant critical habitat and BIAs that intersect the Trunkline Project Area in the Montebello AMP include an internesting buffer and an internesting BIA for flatback turtles. The conservative disturbance area of approximately 2.48 km<sup>2</sup> represents <0.01% of the habitat critical for flatback turtles around the Montebello Islands, and the relatively deep offshore waters where the trunkline disturbance corridor overlaps the northern extent of the Montebello AMP (46 m to 214 m) do not represent important internesting habitat for flatback turtles (refer above). Impacts to foraging habitat for turtles in this area from seabed disturbance are expected to be minimal given the limited area of disturbance and sparse epifaunal communities.

As outlined above, impacts from seabed disturbance during trunkline installation and associated activities will be highly localised and temporary in nature and as such they are not expected to impact upon threatened, migratory, marine or cetacean species listed under the EPBC Act, or Biologically important areas for seabirds, turtles or migrating humpback whales. Therefore, no impacts are expected to the cultural values of the AMP as those are intrinsically linked to the natural values described above.

Impacts from seabed disturbance on the Montebello AMP will be slight and are not inconsistent with the objectives of the North-west Marine Parks Network Management Plan or the zoning of the Montebello AMP (DNP, 2018a). Receptor sensitivity of AMPs is high (high value habitat). The Impact Significance Level of seabed disturbance on AMPs has been identified as **Minor (D)**.

**KEFs**

Three KEFs overlap the Operational Area (Table 6-7). The location and values of the KEFs are summarised below:

- Exmouth Plateau KEF (intersects the Trunkline Project Area at KP 375 for about 60 km): Values and sensitivities are related to seafloor features. These seafloor features may promote enhanced upwelling.
- Ancient Coastline KEF (intersects the Trunkline Project Area at KP 200 for about 3 km): The KEF includes areas of hard substrate, and higher diversity and species richness relative to surrounding areas of predominantly soft sediment. The submerged coastline may facilitate mixing of the water column enhancing productivity. Combined with greater diversity of sessile benthic organisms, this may increase abundance of pelagic species such as fishes and cetaceans, impacts to which are discussed above.
- Continental Slope Demersal Fish Communities KEF (intersects the Trunkline Project Area at KP 201 for about 9 km). The KEF represents high levels of endemism of demersal fish species.

Small areas of seabed in three KEFs will be disturbed as a result of activities associated trunkline installation. Activities within each of the KEFs and associated seabed disturbance area are detailed in Table 6-7.

**Table 6-7: Potential Petroleum Activities Program within KEFs and disturbance**

KEF	Activities which may occur within KEF	Disturbance within KEF (%) based on 30 m disturbance
Exmouth Plateau KEF	Trunkline installation and span rectification	<0.0035

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Ancient Coastline at 125 m Depth Contour KEF	Trunkline installation and span rectification	<0.0004
Continental Slope Demersal Fish Communities KEF	Trunkline installation and continental slope crossing seabed preparation <sup>1</sup>	<0.0007

<sup>1</sup> Note that the final position of excavated materials from continental slope crossing seabed preparation may disperse beyond proposed seabed footprint due to fluidisation of the already very soft soils in the trench profile.

Physical habitat modification is not listed as a potential concern for Exmouth Plateau KEF or Ancient Coastline at 125 m Depth Contour KEF and therefore impacts to the values of these KEFs are not anticipated. Physical habitat modification is listed as a potential concern for the Continental Slope Demersal Fish Communities KEF; however, the total impact area is small, and impacts will be highly localised to the Trunkline Project Area.

Impacts are not likely to be significant from trunkline installation and associated activities as the disturbance will occur in a small proportion of each of the KEFs and avoids important or substantial areas of habitat, including hard substrates of the Ancient Coastline at 125 m Depth Contour KEF.

Impacts from seabed disturbance to the KEFs will be slight. Receptor sensitivity of KEFs is high (high value), and therefore Impact Significance Level of seabed disturbance on KEFs is **Minor (D)**.

**Total Seabed Disturbance**

Table 6-8 provides details on the expected and maximum total seabed disturbance from seabed intervention and trunkline installation activities as defined in Section 6.7.2 and Section 6.7.3. All disturbance will occur within the Trunkline Project Area and Borrow Ground Project Area

**Table 6-8: Estimated seabed disturbance summary (Commonwealth waters)**

Activity	Description	Expected disturbance area (km <sup>2</sup> )	Maximum allowable disturbance area (km <sup>2</sup> )
Trunkline installation	Pipelay on seabed	2.07	12 <sup>1</sup>
	Pipeline and infrastructure crossings (see summary above)	0.06	
	Continental slope crossing seabed preparation (including material placement)	0.10	
Trunkline trenching, spoil disposal and backfill	Trunkline trenching and backfill <sup>2</sup>	0.24	17
	Spoil Ground 5A material disposal <sup>3</sup>	1.60	
Offshore borrow ground dredging	Dredging within offshore borrow ground to source material for backfill	4.00	17

Note 1: Expected disturbance area assumes Commonwealth waters only

Note 2: Expected disturbance area assumes KP32 to KP40, although impact assessment and maximum extent is to KP50

Note 3: Disturbance located within previously disturbed ground

**Summary of Assessment Outcomes**

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Water quality	Change in water quality	Low value	Slight	Negligible (F)
Sediment quality	Change in sediment quality	Low value	Slight	Negligible (F)
Epifauna and infauna	Change in habitat	Low value	Minor	Slight (E)
Marine turtles	Change in habitat Injury/mortality to fauna	High value	Slight	Minor (D)
AMPs	Change in habitat Change in water quality	High value	Slight	Minor (D)

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KEFs	Change in habitat Change in water quality Injury/mortality to fauna	High value	Slight	Minor (D)
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**Overall Impact Significance Level:** The overall impact significance level for disturbance to benthic habitat from trunkline installation and associated activities is D based on a minor impact to the most sensitive receptors (marine fauna, AMPs and KEFs). The impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP. Noting that cultural values and heritage is a risk not included in the Scarborough OPP.

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act	F: Yes CS: Costs associated with the implementation	Implementation of the control ensures any impacts to significant Aboriginal areas and significant Aboriginal objects protected by Ministerial declaration, are acceptable under the standards of the ATSIHP Act.	Control based on legislative requirements – must be adopted.	Yes <b>C 2.9</b>
<b>Good Practice</b>				
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. CS: Costs associated with improved accuracy/tolerance for implementation	Positioning infrastructure within the design footprint will reduce the potential magnitude of impact.	Benefits outweigh cost/sacrifice	Yes <b>C 3.1</b>
Span rectification design for the continental slope crossing is engineered such that seabed excavation is minimised	F: Yes. This is considered good practice. CS: Costs associated with excavation of minimum amount of material to achieve the required design parameters. However cost benefits may also be realised should excavation duration be shortened as a result of reduced excavation requirements.	Avoids unnecessary excavation and hence disturbance of seabed sediments.	The control would significantly reduce the risk of impacts from direct seabed disturbance. Reducing excavation volumes may also reduce project costs (e.g. time).	Yes <b>C 3.2</b>
Excavated material for the continental slope crossing will be placed in a designated areas parallel to the trench.	F: Yes. This is considered good practice. CS: Costs associated with placement accuracy	Placing excavated material within designated areas will reduce the potential magnitude of impact.	Benefits outweigh cost/sacrifice	Yes <b>C 3.3</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
If rock placement test dumps are required, they will be conducted within the indicative 30 m trunkline corridor.	F: Yes. CS: Minimal cost. Standard Practice.	Test dumping within the 30 m disturbance footprint will limit the area where potential impacts may occur.	Benefits outweigh cost/sacrifice	Yes <b>C 3.4</b>
Anchoring procedures to guide the setting of anchors for the SWLB (if required) and include: <ul style="list-style-type: none"> <li>Accurate positioning of anchors</li> <li>Prevention of excessive anchor wire drag on the seabed by ensuring sufficient tension is maintained during anchor running operations.</li> <li>Anchoring equipment certification (winches, anchor wires and associated hardware)</li> <li>Anchor installation as per mooring design analysis</li> </ul>	F: Yes. CS: Minimal cost. Standard Practice.	The mooring design analysis determines the number and spread of anchors required based on sediment type and seabed topography, reducing the likelihood of anchor drag leading to seabed disturbance.	Benefits outweigh cost/sacrifice	Yes <b>C3.5</b>
Any wet parked items will be tracked and removed from the seabed.	F: Yes. CS: Minimal cost. Standard Practice.	Removing wet parked items will reduce the duration of impact.	Benefits outweigh cost/sacrifice	Yes <b>C3.6</b>
No wet parking of equipment will occur within the Montebello AMP.	F: Yes. CS: Minimal cost. Standard Practice.	Avoiding wet parking of equipment within the Montebello AMP will provide a slight reduction in the area where potential impacts may occur.	Benefits outweigh cost/sacrifice	Yes <b>C3.7</b>
Unexpected finds of potential Underwater Cultural Heritage sites / features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in Section 7.7	F: Yes CS: Costs of implementation	Allows management of new finds in accordance with legislative requirements, expert advice and community expectations.	Benefits outweigh cost/sacrifice.	Yes <b>C 2.10</b>
Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to	F: Yes CS: Minimal	Ensures workforce as suitably aware of legal and process requirements for managing cultural	Benefits outweigh cost/sacrifice.	Yes <b>C 2.11</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
follow the Unexpected Finds Procedure (C2.12)		features and heritage values.		
Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, <i>Underwater Cultural Heritage Act 2018</i> and the ATSIHP Act	F: Yes CS: Minimal	Meets legislative requirements and community expectations.	Benefits outweigh cost/sacrifice.	Yes <b>C 2.12</b>
<b>Professional Judgement – Eliminate</b>				
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. 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 considered – control not feasible.	No
<b>Professional Judgement – Substitute</b>				
No additional controls identified.				
<b>Professional Judgement – Engineered Solution</b>				
No additional controls identified.				
<b>ALARP Statement</b>				
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 trunkline installation and associated activities. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
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 Scarborough OPP.
- EPOs and controls in the Scarborough OPP that are relevant to seabed disturbance 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. Following consultations with DNP on the potential risks to AMPs, the DNP noted it has no objections and claims at this time
- Ongoing consultation with MAC identified concerns associated with activities of this EP in Commonwealth waters, to address relevant concerns (see Appendix F, Table 1) additional controls (C 2.7 and C 2.8) have been included in the EP. In addition, recent engagement with MAC has confirmed they have no concerns at this time.

**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 and stakeholder expectations.

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

<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 3</b> 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.</p> <p><b>EPO 5</b> Undertake the Petroleum Activities Program in a manner that ensures no displacement of marine turtles from habitat critical during nesting and internesting periods and marine turtles' biologically important behaviour can continue in biologically important areas..</p> <p><b>EPO 6</b> 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.</p> <p><b>EPO 7</b> Seabed disturbance from trunkline installation within the Montebello Marine Park will be limited to less</p>	<p><b>C 3.1</b> Infrastructure will be placed on the seabed within the design footprint using positioning technology</p>	<p><b>PS 3.1</b> All infrastructure will be placed within the Trunkline Project Area</p>	<p><b>MC 3.1.1</b> Surveys demonstrate infrastructure placement</p>
	<p><b>C 3.2</b> Span rectification design for the continental slope crossing is engineered such that seabed excavation is minimised</p>	<p><b>PS 3.2</b> Design for continental slope crossing includes consideration to reduce excavation volumes</p>	<p><b>MC 3.2.1</b> Engineering drawing show reduction in excavation volumes</p>
	<p><b>C 3.3</b> Excavated material for the continental slope crossing will be placed in designated areas parallel to the trench</p>	<p><b>PS 3.3</b> Material placed within designated areas not exceeding total area of 0.10 km<sup>2</sup></p>	<p><b>MC 3.3.1</b> Surveys demonstrate location of material placement</p>
	<p><b>C 3.4</b> If rock placement test dumps are required, they will be conducted within the indicative 30 m trunkline corridor.</p>	<p><b>PS 3.4</b> Rock placement test dumps completed within indicative 30 m trunkline corridor</p>	<p><b>MC 3.4.1</b> Surveys demonstrate test dump placement</p>
	<p><b>C 3.5</b> Anchoring procedures to guide the setting of anchors for the SWLB (if required) and include:</p> <ul style="list-style-type: none"> <li>• Accurate positioning of anchors</li> <li>• Prevention of excessive anchor wire drag on the seabed by ensuring sufficient tension is maintained during</li> </ul>	<p><b>PS 3.5</b> Anchoring procedures developed and implemented for SWLB (if required).</p>	<p><b>MC 3.5.1</b> Records show anchoring procedures developed and implemented for SWLB (if required).</p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p>than 0.07% of the total park area.</p> <p><b>EPO 8</b> Undertake Scarborough Trunkline Installation within the Montebello AMP in a manner that will not be inconsistent with the objective of the multiple use zone.</p> <p><b>EPO 9</b> Changes to water quality in the Montebello Marine Park as a result of the trunkline installation will not be inconsistent with the objective of the multiple use zone.</p> <p><b>EPO 31</b> No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit<sup>24</sup>.</p>	<p>anchor running operations.</p> <ul style="list-style-type: none"> <li>Anchoring equipment certification (winches, anchor wires and associated hardware)</li> <li>Anchor installation as per mooring design analysis</li> </ul>		
	<p><b>C 3.6</b> Any wet parked items will be tracked and removed from the seabed.</p>	<p><b>PS 3.6</b> All wet parked items removed.</p>	<p><b>MC 3.6.1</b> Surveys demonstrate removal of wet parked items.</p>
	<p><b>C 3.7</b> No wet parking of equipment will occur within the Montebello AMP (excluding abandonment &amp; recovery activities).</p>	<p><b>PS 3.7</b> No wet parking of equipment occurs within the Montebello AMP (excluding abandonment &amp; recovery activities).</p>	<p><b>MC 3.7.1</b> Records demonstrate no equipment is wet parked within the Montebello AMP (except in the case of abandonment &amp; recovery).</p>
	<p><b>C 2.9</b> Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act</p>	<p><b>PS 2.9</b> Refer to Section 6.7.2</p>	<p><b>MC 2.9.1</b> Refer to Section 6.7.2</p>
	<p><b>C 2.10</b> Unexpected finds of potential Underwater Cultural Heritage<sup>25</sup> sites / features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in Section 7.7</p>	<p><b>PS 2.10</b> Refer to Section 6.7.2</p>	<p><b>MC 2.10</b> Refer to Section 6.7.2</p>
	<p><b>C 2.11</b> Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (C2.12)</p>	<p><b>PS 2.11</b> Refer to Section 6.7.2</p>	<p><b>MC 2.11.1</b> Refer to Section 6.7.2</p>
	<p><b>C 2.12</b></p>	<p><b>PS 2.12</b> Refer to Section 6.7.2</p>	<p><b>MC 2.12</b> Refer to Section 6.7.2</p>

<sup>24</sup> Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

<sup>25</sup> Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, <i>Underwater Cultural Heritage Act 2018</i> and the ATSIHP Act		

### 6.7.4 Routine Light Emissions from Project Vessels

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.1.1 – Routine Light Emissions														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7				<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Protected Species – Section 4.6				<b>Stakeholder consultation</b> 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 5, 6, 10, 11, 12
Description of Source of Impact/Risk														
<p><b>Vessel Operations</b></p> <p>Project vessels will have external lighting to support safe operations at night, as well as to communicate the presence and activities of project vessels to other marine users (i.e. navigational lights). This lighting typically consists of bright white (i.e. metal halide, halogen, fluorescent) lights, and is not dissimilar to lighting used for other offshore activities, including fishing and shipping. Lighting is required for the safe operation of the project vessels and cannot reasonably be eliminated.</p> <p>Project vessel light emissions in any one area will be limited by the transient nature of the works along the trunkline route and the cycling of dredging and backfill between the Offshore Borrow Ground Project Area, Trunkline Project Area and disposal of material in Spoil Ground 5A. The Petroleum Activities Program may 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.</p> <p>Based on the recommendations of the National Light Pollution Guidelines for Wildlife (NLPG – Commonwealth of Australia, 2020), the Scarborough OPP (Section 7.1.1.2) considered the activities within 20 km of land, approximately 8 km into Commonwealth waters between KP 32 and around KP 40.</p> <p>The TSHD and pipelay vessels have the greatest potential for impacts from light emissions based on their size (PENV, 2020a; 2022). The effect of sky glow may occur at distances greater than 20 km for some species and under certain environmental conditions; however, the 20 km threshold provides a nominal distance at which light impacts should be considered (Commonwealth of Australia, 2020). Indicative activities that will be conducted within 20 km of land, including estimated duration, are outlined in Table 6-9. These activities were used as assumptions for modelling of light emissions for the Petroleum Activities Program. They are therefore conservative estimates and do not necessarily reflect vessel schedules for these activities.</p> <p>For measuring the impact of Artificial Light At Night (ALAN) on marine turtles, PENV has developed an approach based on the visibility of the full moon. Modelling undertaken (Section 7.1.1.1 of the Scarborough OPP) indicated that light emissions were predicted to reduce to ambient levels (0.01, or 1%, radiance of a full moon) at 5.7 km and 4.7 km from the PV and dredging vessel (TSHD), respectively (PENV, 2020a). Additional modelling completed in 2022, predicted</p>														

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that light emissions would reduce to 0.01, or 1% radiance of a full moon (equivalent to the light output of the first quarter moon) within 5.7 km (PV), 3.2 km (TSHD) and 5.8 km (RIV) (PENV 2022).

Due to spatial and temporal separation of seabed intervention and trunkline installation activities, there is minimal opportunity for concurrent operations within the Petroleum Activities Program in the environments significant to light sensitive fauna (i.e. turtles and seabirds). As discussed in Section 6.2.1 and detailed in Table 6-1 the primary location of concurrent activities is the permit area WA-61-L. As such, cumulative impact from light as a result of concurrent operations is not considered credible. The modelling carried out for light impact assessment (PENV, 2020a) is representative of the maximum vessel spread (DP Pipelay vessel installation spread) due to its consideration of the PV, which eclipses support/supply vessel light emissions due to its size and lighting configuration and the nature of light emissions being non-additive.

**Table 6-9: Indicative trunkline installation and stabilisation activities within 20 km of land Activity (light modelling)**

Activity	Estimated duration	Location	Vessels
Hydrographic, geophysical and geotechnical surveys	8-weeks Vessel continuously present within project areas and constantly moving	Trunkline and Borrow Ground Project Areas	DP survey vessel
Pre-lay trenching and spoil disposal	8-weeks Vessel continuously present within project areas and constantly moving	Trunkline Project Area	Trailing suction hopper dredger (TSHD)
Pipelay	3.5-weeks Vessel continuously present within project areas and constantly moving	Trunkline Project Area	Pipelay Vessel (PV)
Pre-lay and post span rectifications (rock and/or mattress)	2-weeks Intermittent activity: Activities at individual location ~48 hours	Trunkline Project Area	Construction Vessel (CV)/Rock Installation vessel (RIV)
Post-lay borrow ground dredging and backfill	8-weeks Intermittent activity: 2-hours dredging at borrow ground, material transported to trunkline for backfill. Material from borrow grounds placed in trench (up to 5-hours), return to borrow grounds	Trunkline and Borrow Ground Project Areas	TSHD vessel and support

**Detailed Impact Assessment**

**Assessment of Potential Impacts**

Routine light emissions generated by offshore activities has the potential to result in the following impact(s):

- a change in ambient light
- a change in fauna behaviour (marine reptiles, seabirds and migratory shorebirds)
- a change to the functions, interests or activities of other users

**Ambient Light**

The introduction of light emissions from activities associated with the Petroleum Activity Program can result in a temporary change to ambient light.

Existing light sources at the eastern end of the Trunkline Project Area (within 20 km of land) include heavy vessel traffic within the Pilbara Port Authority (PPA) Management area and 26 designated anchorages for bulk carriers, petroleum and gas tankers, drilling rigs, offshore platforms, and pipelay vessels located offshore of Rosemary Island. These anchorages are located between Rosemary Island and the Trunkline Project Area. Although light monitoring within the Dampier Archipelago has not been undertaken, existing light pollution in this area is expected to be high (Commonwealth of Australia, 2017a). As described above, the TSHD and pipelay vessels have the greatest potential for light emissions based on vessel size and associated lighting (PENV, 2020a).

It is considered that the contribution of light emissions from the Petroleum Activities Program will be comparable with existing vessels and facilities on the NWS and will not result in a notable increase within the nearshore/PPA area.

The NLPG address potential impacts to marine turtles, seabirds and migratory shorebirds from artificial light at night (ALAN) (Commonwealth of Australia, 2020). The aim of the Guidelines is for artificial light to be managed so wildlife is:

- 1) not disrupted within, nor displaced from, important habitat; and
- 2) able to undertake critical behaviours such as

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foraging, reproduction and dispersal. The guidelines recommend best practice lighting design principles, however implementation of these may not always be possible when contracting existing vessels. The guidelines also 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 15-18 km from onshore LNG and alumina facilities (Kamrowski, et al., 2014; Hodge et al., 2007) and fledgling seabirds grounded in response to artificial light up to 15 km, as reported for short-tailed shearwaters on Philip Island (Rodríguez et al., 2014).

The Operational Area is located offshore. The Offshore Borrow Ground Project Area is 6.6 km from the nearest island or other emergent features (Legendre Island) and the Trunkline Project Area is 12 and 14 km from the nearest islands (Legendre and Rosemary Islands, respectively). The Operational Area is within known BIAs for marine turtles and seabirds/migratory shorebirds, therefore a specific study for artificial lighting is required under the guidelines, and was completed as part of the Scarborough OPP development and additional modelling completed by PENV for the PV, TSHD and RIV in 2022.

For measuring the impact of Artificial Light At Night (ALAN) on marine turtles, PENV has developed an approach based on the visibility of the full moon. Modelling predicted that light emissions would reduce to 0.01, or 1% radiance of a full moon (equivalent to the light output of the first quarter moon) within 5.8 km (RIV), 5.7 km (PV) and 3.2 km (TSHD) (PENV 2022). At this level, light or light glow is visible but impact on hatchling behaviour is considered unlikely (i.e., not biologically relevant) (Aube et al., 2005).

There is potential for behavioural impacts to marine turtles to occur (greater than 0.1 full moon equivalent) within 1.8 km (PV), 1.2 km (RIV), and 0.7 km (TSHD) (PENV 2022), but behavioural impacts are more likely (greater than radiance of one full moon) within 0.6 km (PV), 0.3 km (RIV), and 0.2 km (TSHD) (PENV 2022).

## Change in Fauna Behaviour

### Marine Turtles - Adults

The Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017a) identifies light pollution as a high risk threat to marine turtles in the NWS region, including the relevant stocks of green, flatback and hawksbill turtles surrounding the Operational Area. The plan indicates that artificial light may reduce the overall reproductive output of a stock, and therefore recovery of the species, by: 1) inhibiting nesting by females, 2) creating pools of light (i.e. light spill) that attract hatchlings and increased predation, and 3) disrupting hatchling behaviour and sea finding behaviour (Commonwealth of Australia, 2017a).

Artificial lighting may affect where nesting adult turtles emerge onto the beach, the success of nest construction, whether nesting is abandoned, and the seaward return of adults (Salmon et al., 1995a, 1995b; Salmon and Witherington, 1995, Witherington and Martin, 2003). Such lighting is typically from residential and industrial development at the coastline, rather than offshore from nesting beaches. There is no evidence, published or anecdotal, to suggest that internesting, mating, foraging or migrating turtles are impacted by light from offshore vessels. Although individuals undertaking internesting, migration, mating (adults) or foraging (adults and pelagic juveniles) may occur within the Operational Area, marine turtles do not use light cues to guide these behaviours, and therefore light emissions from project vessels are unlikely to result in displacement of, or behavioural changes to individuals during these life stages (PENV, 2020a).

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

Seasonality of nesting differs between flatback, green and hawksbill turtle species. Whiting (2018) provides defined seasonality specific nesting data for Rosemary Island and found that hawksbill turtles have a much earlier peak (October/November) compared to flatback turtles (December/January peak). Seasonality for green turtles was not well defined from the available data (Whiting, 2018). Fossette et al. (2021) reported a peak in nesting for green turtles for the period November and December (refer to Table 4-18).

The peak hatchling emergence time for the three turtle species nesting within Dampier Archipelago differs between species, with hawksbill turtles earliest (December to January peak), flatback turtle peak from January to February and green turtle peak from January to March (PENV, 2022) (refer to Table 4-18).

The distance between turtle nesting beaches and the Operational Area at the closest point (6.6 km to Legendre Island and >10 km to closest nesting beach on Legendre Island and 14 km to Rosemary Island) are all greater than the zone where behavioural impacts from vessel lighting are possible: within 0.7 km of the TSHD and 1.8 km of the PV. Therefore,

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impacts to nesting female turtles, including discouraging females from nesting, or affecting nest site selection and sea-finding behaviour, are not predicted, and females are not expected to be displaced from nesting habitat (PENV, 2022).

Disturbance to transient adult turtles in offshore waters along the Trunkline Project Area from artificial light is not expected given light emissions are unlikely to result in behavioural change for key life cycle stages such as internesting and nesting.

Impacts are not expected to be contrary to the priority actions or measures of success criteria outlined in the Recovery Plan for Marine Turtles (Commonwealth of Australia, 2017a) for the relevant marine turtle stocks or management of artificial light.

**Marine Turtles – Hatchlings**

Turtle hatchlings emerge from the nest and orient towards the sea. After entering the water, hatchlings use a combination of cues (wave direction and currents) to orient and travel into offshore waters. Exposure to artificial light can alter how hatchlings find the sea after emerging from their nests, and how they disperse once they are in the sea (Witherington and Martin, 2003). Impacts to the sea-finding behaviour of hatchlings are more common for light sources behind a beach, as lighting offshore will orient emerging hatchlings towards the sea. At close distances to artificial light, light spill may ‘entrap’ hatchling swimming behaviour, reducing the success of their seaward dispersion and potentially increasing their exposure to predators via silhouetting (Salmon et al., 1992).

As above, the light modelling of a representative PV and TSHD vessel (PENV, 2022) indicates that light levels at the nearest nesting beaches to the Operational Area are below thresholds where behavioural impacts are possible. Therefore, impacts to hatchling emergence, including hatchling mis- or dis-orientation, are not predicted and highly unlikely. Impacts to hatchling dispersal resulting from vessel lighting are possible but will be limited as:

- The distance between turtle nesting beaches and the Operational Area at the closest point (6.6 km to Legendre Island and >10 km to closest nesting beach on Legendre Island and 14 km to Rosemary Island).
- Nearshore currents would need to carry hatchlings into the zone where behavioural impacts from vessel lighting are possible (within 1.8 km of the PV, 0.7 km of the TSHD and 1.2 km for the RIV).
- The density of hatchlings will decrease with distance from the nesting beach as individuals disperse in open ocean.
- Nearshore currents in the region must be weaker than hatchling swimming speed in order for hatchlings to override wave cues and successfully swim toward light sources.
- The potential for attraction to vessel lighting is expected to be overridden by the radiance of the moon during full moon periods.
- Vessels within 20 km of nesting beaches will be in the area temporarily (months) during the Petroleum Activities Program, light emissions will not be ongoing.
- Vessels within the Operational Area will be continuously moving at varying speeds, particularly within the Offshore Borrow Ground Project Area where vessel presence is limited to a few hours at a time.
- Attraction to light sources will not occur during daylight and hatchling dispersal will resume upon sunrise.

Attraction to artificial lighting may have consequences at the individual level (e.g. energy depletion and increased predation risk), however, the number of marine turtles that could be impacted is likely to be low and undetectable against normal population fluctuations. The desktop lighting assessments by PENV (2020a and 2022) concluded that the light emissions from vessel activities in the Trunkline and Borrow Ground Project Area would not have significant impact on marine turtles across the whole life cycle.

Impacts are not expected to be contrary to the priority actions or measures of success criteria outlined in the Recovery Plan for Marine Turtles (Commonwealth of Australia, 2017a) for the relevant marine turtle stocks or management of artificial light.

The magnitude of impact to marine turtles from artificial light emissions will be ‘no lasting effect’ given the localised and temporary nature of any effects as described above. Receptor sensitivity is high. The Impact Significance Level of has therefore been identified as **Slight (E)**.

**Seabirds and Migratory Shorebirds**

Artificial light can have a variety of effects on seabirds and shorebirds, depending upon the species and the life stage or behaviours being undertaken at the time. Negative responses of birds to artificial light may include collision, entrapment, stranding, grounding, disorientation or interference with navigation (being drawn off course from usual migration route), potentially resulting in reduced fitness, injury and/or death (see Commonwealth of Australia, 2020 for review).

All seabird species active at night are vulnerable to artificial light as it can disrupt their ability to orient towards the sea (Commonwealth of Australia, 2020). Species with a nocturnal component to their behaviour and life history, such as procellariiforms (including wedge-tailed shearwaters), are at greater risk of negative impacts from artificial light sources at night. The bulk of the literature concerning impacts of lighting upon procellariiforms relates to the synchronised mass exodus of fledgling seabirds from their nesting sites (Deppe et al., 2017; Raine et al., 2007; Rodriguez et al., 2017a; Rodriguez et al., 2017b), with fewer investigating the impacts of light at sea.

Diurnal seabird species, such as terns, noddies and boobies, in contrast to procellariiforms, are less vulnerable to impacts resulting from nocturnal behaviours. However, the presence of lit facilities can result in localised alteration of foraging behaviours such as extended foraging durations.

Adult shearwaters are vulnerable to artificial lighting in the breeding cycle, when returning to and leaving the nesting colony to maintain nesting sites or forage. Foraging wedge-tailed shearwaters may be attracted to sources of light emissions to feed on fish drawn to the light, however the species reportedly feeds predominately during the day (Catry et al. 2009). Artificial light can also impact behaviour and adult nest attendance, or confuse shearwater species, resulting in injury or mortality as a result of birds colliding with structures (Cianchetti-Benedetti et al. 2018; Rodriguez et al. 2017a and b). Fledglings of burrow-nesting seabirds, and to a lesser extent adults, are attracted to and then grounded (i.e., forced to land) by lights when they fly at night with the most affected seabirds being petrels and shearwaters (Procellariiformes) (Rodriguez et al. 2017). Shearwater fledglings are predominately impacted by onshore lighting sources, which can override sea finding cues and attract fledglings further inland, preventing them from reaching the sea (Mitkus et al. 2016; Telfer et al., 1987). Fledglings leave the nesting colony for the sea at night and the main fledgling period for shearwaters in Western Australia is reportedly April. Reported mass groundings and mortalities are associated with formerly uninhabited islands and the risk of light pollution from tourism and urban sprawl, and generally occur during adverse weather conditions. This is probably because of the potential for clouds, mist and rain to increase light pollution levels (Kyba et al., 2011), however recent research is revealing added complexity including moon phase, wind strength and direction (see Commonwealth of Australia, 2020 for review).

The Operational Area is in proximity to and overlaps breeding and foraging habitat for a number of seabird species and the nearest KBA for migratory shorebirds is located at the Dampier Saltworks. Onshore nesting habitat, including for the wedge-tailed shearwater, roseate, Caspian and Australian fairy tern, is reported for the Dampier Archipelago and other offshore islands groups such as the Montebellos and Lowendals. Adults utilising these breeding habitats (see BIAs in Table 4-16) will forage in nearshore waters (e.g., the Australian fairy tern) or offshore waters (e.g., wedge-tailed shearwater, Caspian and roseate terns, refer to Section 4.6.4). The Operational Area is located in offshore waters and there is no emergent land available for seabird roosting or nesting. This Operational Area represents a relatively small portion of the seabird BIAs and while seabird presence may occur, it is considered likely to be of a transient nature only.

There is a small overlap between the Operational Area and a breeding BIA for roseate terns between KP 32 to ~KP 58. Breeding populations of this tern species occur throughout the NWMR (overlapping with the EMBA) on fringing islands of the Burrup Peninsula, Montebello Islands, North Turtle Island, Airlie Island, the Ningaloo coast and Bernier Island. There is also an overlap between the Operational Area and a breeding/foraging BIA for wedge-tailed shearwaters between KP 32 to ~KP 220. Wedge-tailed shearwaters occurs throughout the NWMR (overlapping with the EMBA) across fringing islands of the Dampier Archipelago to Cape Range and to Barrow Island. Given the broad breeding distribution it may be assumed that wedge-tailed shearwaters may breed on any of the vegetated, unoccupied islands of the Dampier Archipelago.

The Offshore Borrow Ground Project Area is 6.6 km from the nearest island or other emergent features (Legendre Island) and the Trunkline Project Area is 12 and 14 km from the nearest islands (Legendre and Rosemary Islands, respectively, and within the 20 km nominal distance at which artificial light impacts should be considered (Commonwealth of Australia, 2020).

Light modelling undertaken (Section 7.1.1.1 of the Scarborough OPP) indicated that light emissions were predicted to reduce to ambient levels (0.01, or 1%, radiance of a full moon) at 5.7 km and 4.7 km from the PV and TSHD vessel, respectively. PENV (2022), modelling and desk top assessment confirmed predicted light emissions to reduce to ambient levels (0.01, or 1%, radiance of a full moon) at 5.7 km for the PV, 3.2 km for the TSHD and 5.8 km for the RIV. Therefore, any potential impacts to seabirds and migratory shorebirds are expected to be localised within the vicinity of vessels. It is also highly unlikely that adult nocturnal seabird foraging will be disturbed given the localised light emissions from activity vessels. Potential for overlap of vessel activities, namely trunkline trenching by the TSHD near the State waters boundary, with the wedge-tailed shearwater fledgling exodus from islands of the Dampier Archipelago in April is possible. However, given the localised vessel light emissions predicted and existing light sources in the marine waters of the area, activity vessels continually moving at varying speeds and the expected, generally benign weather conditions in this region, the potential for wedged-tailed shearwater fledglings leaving burrows at night to collide, ground or become disoriented are considered unlikely. The worst-case scenario for cumulative vessel lighting is considered to be during pipelay when the PV is undertaking pipelay operations; a B-Type vessel is either performing resupply alongside the PV or bunkering alongside a tanker under DP; and an OSV under DP is alongside the PV. However, the duration of this activity in proximity to the Dampier Archipelago will be temporary as the vessels progress along the trunkline route further offshore.

Direct lighting impacts to diurnal seabirds on the islands of the Dampier Archipelago are not expected based on the maximum extent of lighting emissions from the modelling (PENV, 2022) and the behaviour of diurnal seabirds as they roost on islands and mainland habitat from dusk to dawn. The potential for temporary behavioural disturbance localised around vessels is not expected to result in a substantial adverse effect on species' population, and light emissions will not seriously disrupt the lifecycle of an ecologically significant proportion any migratory bird species.

The magnitude of impact to seabirds and migratory shorebirds from artificial light emissions will be 'no lasting effect' given the localised and temporary nature of any effects as described above, plus the incremental increase of project vessel lighting in a region that already experiences considerable vessel traffic. Receptor sensitivity is high. The Impact Significance Level has therefore been identified as **Slight (E)**.

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**Fish**

Experiments using light traps have found that some fish and zooplankton species are attracted to light sources (Meekan et al., 2001), and therefore, lighting from project vessels may result in localised aggregations of fish around the vessel. Krill or plankton may also aggregate around the source of light. The concentration of organisms attracted to light may result in an increase in food source for predatory species and marine predators may subsequently aggregate in these areas (Shaw et al., 2002). The Trunkline Project Area overlaps with the whale shark BIA however, potential light disturbance is restricted to vessels during trunkline installation. Presence of other threatened fish species within the Operational Area or pipeline route is expected to be of a transient nature only. Vessels undertaking trunkline installation activities will be continuously moving and present for short periods only, and are not expected to seriously disrupt the lifecycle of an ecologically significant proportion of whale sharks. Additionally, light emissions from project vessels are comparable to other activities in the region (e.g. shipping, fishing).

The magnitude of impact to fish from artificial light emissions will be 'no lasting effect' and receptor sensitivity is medium. The Impact Significance Level of has therefore been identified as **Negligible (F)**.

**AMPs**

The Operational Area overlaps the Montebello Marine Park, and the Dampier Marine Park is less than 1 km from the Borrow Ground Project Area. The North-west Marine Parks Network Management Plan (DNP, 2018a) lists the natural values of the Montebello and Dampier AMPs as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act, as well as BIAs that include seasonal breeding habitat for seabirds, internesting habitat for marine turtles and a migratory pathway for humpback whales. The Montebello AMP also includes foraging, mating, and nesting habitat for marine turtles and foraging habitat for whale sharks, while the Dampier AMP includes foraging habitat for seabirds. The Montebello Marine Park and Dampier Marine Park are overlapped by internesting buffer Habitat Critical to the survival of flatback, green and hawksbill turtles. As described above, there is no evidence, published or anecdotal, to suggest that internesting, mating, foraging or migrating turtles are impacted by light from offshore vessels. Although individuals undertaking internesting, migration, mating (adults) or foraging (adults and pelagic juveniles) may occur within the Operational Area, marine turtles do not use light cues to guide these behaviours, and therefore light emissions from project vessels are unlikely to result in displacement of, or behavioural changes to individuals during these life stages. Hence, light emissions from project vessels in the areas where the Operational Area overlaps these AMPs will not result in any impacts to internesting female turtles.

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

The values identified for both these marine parks including BIAs for marine turtles, seabirds and migratory shorebirds will not be impacted given the significant distance from sensitive locations. Therefore, no impacts are expected to the cultural values of the AMP as those are intrinsically linked to the natural values described above.

The magnitude of impact to AMPs from artificial light emissions will be 'no lasting effect' given the localised and temporary nature of any effects as described above. Receptor sensitivity is high based on important habitat for marine turtles and seabirds that are sensitive to lighting impacts. The Impact Significance Level has therefore been identified as **Slight (E)**.

**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)
Marine Reptiles	Change in fauna behaviour	High value species (e.g. flatback turtle)	No Lasting Effect	Slight (E)
Seabirds and Migratory Shorebirds		High value species (e.g. wedge-tailed shearwater)	No Lasting Effect	Slight (E)
AMPs	Change in fauna behaviour	High value species	No Lasting Effect	Slight (E)

**Overall Impact Significance Level:** The overall impact significance level for routine light emissions is E based on slight, short-term impacts to the high value (marine turtles, seabirds and migratory shorebirds). The impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
No additional controls identified.				
<b>Good Practice</b>				
Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	F: Yes. Lighting is typically appropriate for navigation and safety. CS: Minimal cost sacrifice – usual mode of operation.	Given the potential impacts to turtles during this activity is insignificant, implementation of this control would not result in a reduction in consequence.	Benefits outweigh cost / sacrifice	Yes <b>C 4.1</b>
Lighting modifications (shielding, directional lighting) to minimise over water light spill and light emissions during peak turtle hatchling season (Dec to Mar).	F: Yes, lighting is able to be modified on the PV and TSHD. CS: Financial cost of changes and time associated with implementing these.	Reducing light spill over water and overall light glow from a vessel can reduce the likelihood that hatchling behaviour will be influenced. Light modelling of a representative PV and TSHD has predicted that light emissions will reduce to ambient levels at 5.7 km and 3.2 km, respectively, and hence will not be at levels likely to impact turtle behaviour at nesting beaches.	Cost/sacrifice outweighs benefit. Due to the distance of key activities (pipelay and dredging) from turtle nesting beaches (>10 km, and the temporary / transient nature of this activity; benefits in implementing this control are expected to be minimal.	No
PV, RIV and TSHD crew will be trained in light reduction measures when operating within 20 km of Islands between December and April <sup>26</sup> .	F: Yes. CS: Minimal cost/sacrifice.	Reducing overall light emissions from the vessel can reduce light glow and potentially lower the area over which vessel lighting may impact turtle behaviour. Given distance of the Operational Area from known turtle nesting beaches, a reduction in consequence from implementation of this control is not expected.	While the control does not result in significant reduction of potential impacts, it is good practice to raise awareness.	Yes <b>C 4.2</b>

<sup>26</sup> Peak turtle hatchling emergence period is December to March, with the wedge-tailed shearwater fledglings emergence in April.

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
Implement a Seabird Management Plan that includes: <ul style="list-style-type: none"> <li>Standardisation and maintenance of record keeping and reporting of seabird interactions</li> <li>Procedures on seabird intervention, care and management</li> <li>Regulatory reporting requirements for seabirds (unintentional death of or injury to seabirds that constitute MNES)</li> <li>A scalable adaptive management process should negative light impacts to nocturnal seabirds be detected</li> </ul>	F: Yes. CS: Minimal cost/sacrifice.	Implementing a Seabird Management Plan will enable standardised data collection to better understand seabird interactions with project vessels, provide guidance on seabird management to enable the best outcomes for grounded birds and facilitate escalation and adoption of management actions within 24 hrs, preferably before next nightfall, should triggers be met.	While the control does not result in significant reduction of impacts, it is good practice and not at significant cost.	Yes <b>C 4.3</b>
<b>Professional Judgement - Eliminate</b>				
Variation of the timing of the Petroleum Activities Program within 20 km of turtle nesting beaches to avoid peak turtle hatchling emergence periods (Dec to Mar).	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. The Petroleum Activities Program is due to be undertaken over approx. 12 months with activities completed at various times throughout the year. To avoid peak turtle hatchling emergence periods would result in significant delays to the project.	Avoiding peak hatchling emergence periods may reduce light attraction of hatchlings. Impacts to hatchling dispersal resulting from vessel lighting are possible but will be limited by the distance of the Operational Area from the turtle nesting beaches and the temporary nature of the Petroleum Activities Program. Implementation of this control would not result in a reduction in consequence due to the distance of the Operational Areas from turtle nesting beaches and the small area impacted by vessel light glow.	The cost/sacrifice outweighs benefit gained.	No
Loading of supplies which require direction of floodlights outside vessel will not occur	F: Yes. It is possible to restrict loading from	Avoiding vessel transfer activities at night within 20 km	The cost/sacrifice outweighs benefit gained.	No

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
within 20 km of turtle nesting beaches during peak hatchling season (Dec to Mar) during hours of darkness	supply vessels to daylight hours CS: High cost in moving or delaying schedules around daylight hours. May result in lack of supplies required to carry out the activity.	of nesting beaches during peak hatchling season, will potentially reduce light spill on the ocean surface which is more apparent during darkness, therefore prevent attraction of hatchlings.  Light modelling of a representative TSHD and PV has indicated that light will not be at levels likely to impact turtle behaviour at nesting beaches within 20 km of the Operational Area. Implementation of this control would not result in a reduction in consequence.		
Crew transfers which require direction of floodlights outside the vessel will preferentially occur during daylight hours, when vessels within 20 km of islands between December and April <sup>27</sup> .	F: Yes. CS: Cost implication and delay of crew transfers.	Reducing light spill onto the water can reduce hatchling attraction to the vessel. Given distance of the Operational Area from known turtle nesting beaches, a reduction in consequence from implementation of this control is not expected.	While the control does not result in significant reduction of impacts, it is good practice and not at significant cost	Yes <b>C 4.4</b>
Turn off lighting on vessel crane(s) at night-time (excluding red signalling light on crane mast required for safety) when not in use within 20 km Islands between December and April <sup>27,27</sup> .	F: Yes. Crane lighting not required when crane is not in use. CS: Minimal cost/sacrifice.	Reducing light spill onto the water can reduce hatchling attraction to the vessel. Given distance of the Operational Area from known turtle nesting beaches, a reduction in consequence from implementation of this control is not expected.	While the control does not result in significant reduction of impacts, it is good practice and not at significant cost	Yes <b>C 4.5</b>

<sup>27</sup> Peak turtle hatchling emergence period is December to March, with the wedge-tailed shearwater fledglings emergence in April.

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Professional Judgement - Substitute</b>				
Substitute external lighting with “turtle friendly” light sources, (e.g. lights containing short wavelength, violet/blue light, white LEDs).	<p>F: Yes. Replacement of some/all external lighting with turtle friendly lighting is technically feasible.</p> <p>CS: Financial cost and time associated with retrofitting external lighting on the vessels. Logistical effort to source sufficient inventory of the range of light types required, and to schedule works required for the vessels.</p> <p>Impacts to safety where lighting no longer performs its function to the full extent intended.</p>	Substituting external lighting will reduce light emissions in turtles visible spectrum. Impacts to hatchling dispersal resulting from vessel lighting are possible but will be limited by the distance of the Operational Area from the turtle nesting beaches and the temporary nature of the Petroleum Activities Program. Implementation of this control would not result in a reduction in consequence.	The cost/sacrifice outweigh the benefit gained.	No
<b>Professional Judgement – Engineered Solutions</b>				
PV, RIV and TSHD to use block-out blinds / curtains on accommodation windows at night when operating vessels within 20 km of turtle nesting beaches <sup>27</sup>	<p>F: Yes. Installing block-out blinds / curtains is technically feasible.</p> <p>CS: Minimal cost/sacrifice. Accommodation modules on vessels usually have window treatments for crew comfort.</p>	Reducing light emissions from the vessel at night can reduce light glow and the area over which light may impact turtle hatchling emergence and wedge-tailed shearwater fledgling emergence.	Benefits outweigh minimal cost/ sacrifice of implementation.	Yes. <b>C 4.6</b>

**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 in its current risk state. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
<p>The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5):</p> <ul style="list-style-type: none"> <li>• Overall impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>• EPOs and controls in the Scarborough OPP that are relevant to routine light emissions have been adopted.</li> <li>• There are no changes to internal/external context specific to this risk from the Scarborough OPP. Impacts from light was raised during stakeholder consultation (Appendix F, Table 1) and these were considered in the finalisation of the EP. Following consultations with DNP on the potential risks to AMPs, the DNP noted it has no</li> </ul>

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objections and claims at this time and in recent engagement MAC has confirmed they have no concerns at this time.

**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. BIAs for 20 EPBC Act listed Threatened or Migratory species overlap the Operational Area or EMBA. 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 6.9.2).

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) and the Demonstration of Acceptability (above) aligns with this. 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**

<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 5</b> Undertake the Petroleum Activities Program in a manner that ensures no displacement of marine turtles from habitat critical during nesting and interesting periods and marine turtles' biologically important behaviour can continue in biologically important areas.</p> <p><b>EPO 6</b> 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.</p> <p><b>EPO 10</b> 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.</p> <p><b>EPO 11</b> 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</p>	<p><b>C 4.1</b> Lighting will be limited to the minimum required for navigation and safe operational requirements, with the exception of emergency events.</p>	<p><b>EPS 4.1</b> Lighting limited to that required for safe work/navigation.</p>	<p><b>MC 4.1.1</b> Inspection verifies no excessive light being used beyond that required for safe work/navigation.</p>
	<p><b>C 4.2</b> PV, RIV and TSHD crew will be trained in light reduction measures when operating within 20 km of Islands between December and April<sup>27</sup>.</p>	<p><b>EPS 4.2</b> PV, RIV and TSHD crew will be trained in light reduction measures when operating within 20 km of Islands between December and April<sup>27</sup>.</p>	<p><b>MC 4.2.1</b> Crew training records</p>
	<p><b>C 4.3</b> Develop a Seabird Management Plan that includes:</p> <ul style="list-style-type: none"> <li>• Standardisation and maintenance of record keeping and reporting of seabird interactions</li> <li>• Procedures on seabird intervention, care and management</li> <li>• Regulatory reporting requirements for seabirds (unintentional death of or injury to seabirds that constitute MNES)</li> <li>• A scalable adaptive management process should negative light impacts to nocturnal seabirds be detected</li> </ul>	<p><b>EPS 4.3</b> Implementation of the Woodside Seabird Management Plan by PV, TSHD &amp; RIV to minimise potential impact should grounding occur.</p>	<p><b>MC 4.3.1</b> Records demonstrate Woodside Seabird Management Plan implemented</p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
proportion of the population of a migratory species. <b>EPO 12</b> 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.	<b>C 4.4</b> Crew transfers which require direction of floodlights outside the vessel will preferentially occur during daylight hours, when vessels are within 20 km Islands between December and April <sup>27</sup> .	<b>EPS 4.4</b> Crew transfers preferentially planned for daylight hours, when vessels are within 20 km Islands between December and April <sup>27</sup> .	<b>MC 4.4.1</b> Records show timing of vessel crew transfers during Dec to April.
	<b>C 4.5</b> Turn off lighting on vessel crane(s) at night-time (excluding red signalling light on crane mast required for safety) when not in use within 20 km of Islands between December and April <sup>27</sup> .	<b>EPS 4.5</b> Lighting on vessel crane(s) will be turned off at night-time (excluding red signalling light on crane mast required for safety) when not in use when vessels are operating within 20 km of islands between December and April	<b>MC 4.5.1</b> Inspection records show lighting on vessel cranes have been turned off as required.
	<b>C 4.6</b> PV, RIV and TSHD to use block-out blinds / curtains on accommodation windows at night when operating vessels within 20 km of Islands between December and April <sup>27</sup> .	<b>EPS 4.6</b> Block out blinds available and used in accommodation quarters onboard the PV, RIV and TSHD at night when operating vessels within 20 km of Islands between December and April <sup>27</sup> .	<b>MC 4.6.1</b> Inspection records show block-out blinds / curtains on vessel windows have been closed at night-time, as required.

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### 6.7.5 Routine Atmospheric Emissions and Greenhouse Gas Emissions

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.1.2 – Routine Atmospheric Emissions														
Context														
<b>Relevant Activities</b> Vessel Operations - Section 3.7				<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Protected Species – Section 4.6				<b>Stakeholder consultation</b> 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	-	-	LCS GP PJ	Broadly Acceptable	EPO 13, 14
Description of Source of Impact/Risk														
<p>Atmospheric emissions refer to the discharges to the atmosphere of gases and particulates from an activity, or from a facility or piece of machinery, which have a recognised adverse effect on human health and/or flora and fauna. The main emissions responsible for these effects include carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), particulate matter less than 10 microns (PM<sub>10</sub>), non-methane volatile organic compounds (VOCs), BTEX (benzene, toluene, ethylbenzene and xylenes), which are specific VOCs of interest.</p> <p>Greenhouse gas (GHG) emissions are defined as those gases 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<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). Other greenhouse gases include perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF<sub>6</sub>).</p> <p>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).</p> <p>Vessel use within the Operational Area closer to shore where townships are present is limited to the works along the trunkline route and the cycling of dredging and backfill between the Offshore Borrow Ground Project Area, Trunkline Project Area and disposal of material in Spoil Ground 5A. Works of this nature closer to shore will be conducted over a period of months (Section 3.6) and vessels will be continually moving. Vessel use will extend offshore within the Trunkline Project Area to a distance of approximately 375 km from the shore.</p> <p>Atmospheric emissions generated during the Petroleum Activities Program will include SO<sub>x</sub>, NO<sub>x</sub>, particulates and Volatile Organic Compounds (VOCs). SO<sub>x</sub> and particulate matter emissions are heavily influenced by the fuel used and its relative sulphur content, MGO having a lower sulphite content than marine diesel oil or heavy fuel oil (HFO).</p> <p>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 according to the broad project phases described in section 3:</p>														

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- Pre-Lay Seabed Intervention: 25,000 tCO<sub>2</sub>e
- Trunkline Installation: 130,000 tCO<sub>2</sub>e
- Post-Lay Seabed Intervention: 30,000 tCO<sub>2</sub>e

Total GHG emissions for the whole activity are expected to be approximately 185,000 tCO<sub>2</sub>e.

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

Routine atmospheric and greenhouse gas emissions from vessel operations has the potential to result in the following impact(s):

- change in air quality

As a result of a change in air quality, further impacts may occur, which include:

- injury and/or mortality to fauna
- climate change
- change in aesthetic value.

#### Air Quality

Atmospheric and greenhouse gas emissions from the Petroleum Activities Program 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<sub>2</sub>, NO<sub>x</sub>, ozone depleting substances, CO<sub>2</sub>, particulates and VOCs. Emissions from engines, generators and deck equipment may be toxic, odoriferous or aesthetically displeasing, and will result in a reduction in air quality.

The air quality within the Operational Area 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.

Although the Offshore Borrow Ground Project Area and part of the Trunkline Project Area are located closer to the shore, they remain in open ocean and well-removed from nearest residential or sensitive populations of the WA coast. Given the short duration and exposed location of project vessels, low volumes of atmospheric emissions will be rapidly dispersed, therefore biodiversity, ecological integrity, social amenities and human health will not be impacted.

#### 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 atmospheric emissions from project vessels will be transient and temporary, and that fauna numbers will be low at the point of discharge, injury or mortality to fauna a result of atmospheric discharges is considered negligible and has not been evaluated further.

#### Climate Change

GHG emissions generated by vessels contribute to global concentrations of GHG emissions. Cumulative increases in net global atmospheric GHG concentrations are considered to contribute to climate change. Climate change impacts cannot be directly attributed to any one activity, as they are instead the result of global GHG emissions, minus global GHG sinks, that have accumulated in the atmosphere since the industrial revolution.

The impact assessment of the 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 7.1.3.8 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, 2020). 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.

#### Aesthetic 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. Scarborough is located in the open ocean and is well-removed from nearest residential or sensitive populations of the WA coast, with limited interaction with the regional airshed. Although the Offshore Borrow Ground Project Area and part of the Trunkline Project Area are located closer to the shore, they remain in open ocean

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and the potential for a change in air quality from atmospheric emissions associated with Scarborough resulting in a change to aesthetic value for tourism/recreation or settlements is not considered to be credible.

**Summary of Assessment Outcomes**

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level / Risk Consequence
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 negligible (F) based on a slight effect on air quality. The impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.

**Demonstration of ALARP**

Control Considered	Control Feasibility (F) and Cost/Sacrifice (CS)	Benefit in Impact/Risk Reduction	Proportionality	Control Adopted
<b>Legislation, Codes and Standards</b>				
Vessel compliance with Marine Order 97 (Marine pollution prevention – Air pollution) including: <ul style="list-style-type: none"> <li>International Air Pollution Prevention (IAPP) Certificate, required by vessel class</li> <li>Use of low sulphur fuel when available Ship Energy Efficiency Management Plan (SEEMP), where required by vessel class</li> <li>Onboard incinerator to comply with Marine Order 97.</li> </ul>	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 <b>C 5.1</b>
Reporting of GHG emissions as required by regulatory requirements	F: Yes. CS: Minimal cost. Standard practice	Emissions reporting can increase transparency and accountability	Control based on regulatory requirements – must be adopted.	Yes <b>C 5.2</b>
<b>Good Practice</b>				
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 <b>C 5.3</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
Primary Installation Contractors for the Petroleum Activities Program will be engaged to identify additional GHG emissions reduction opportunities	F: Yes CS: Minimal cost. Good Practice	Processes to identify opportunities for GHG emissions reductions can drive continuous improvement in emissions management and ensure no opportunities are missed as design and project definition matures.	Potential benefit outweighs cost/sacrifice.	Yes <b>C 5.6</b>
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 <b>C5.7</b>
<b>Professional Judgement - Eliminate</b>				
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
<b>Professional Judgement - Substitute</b>				
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 which may be required to change fuel type	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 <b>C 5.4</b>
Predominantly use DP Bulk Carriers (B-Types) for pipe supply vessels servicing the PV	F: Yes CS: Time in designing and building the B-type vessels and technical risk associated with new-build vessels	Increasing efficiency of pipe transfer activities can reduce fuel usage and subsequent GHG / air emissions	Potential benefits outweigh cost / sacrifice	Yes <b>C 5.5</b>
<b>Professional Judgement – Engineered Solutions</b>				
No additional controls identified.				
<b>ALARP Statement:</b>				
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Demonstration of ALARP				
Control Considered	Control Feasibility (F) and Cost/Sacrifice (CS)	Benefit in Impact/Risk Reduction	Proportionality	Control Adopted
On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, Section 2.3.3), Woodside considers the adopted controls are considered good oil-field practice/industry best 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
<b>Acceptability Criteria and Assessment</b>
<p>The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5):</p> <ul style="list-style-type: none"> <li>Overall impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>EPOs and controls in the Scarborough OPP that are relevant to GHG emissions have been adopted.</li> <li>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: <ul style="list-style-type: none"> <li>Woodside setting clear targets, to reduce net equity 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.</li> <li>Woodside will apply offsets (carbon credits) where necessary to meet its obligations under these corporate targets.</li> <li>Australia has updated its Nationally Determined Contribution (NDC) under the Paris Agreement and legislated accordingly, to a reduction in greenhouse gas emissions by 43% below 2005 levels by 2030 on a path leading to net zero by 2050</li> <li>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 Woodsides aspiration to reach net zero by 2050.</li> </ul> </li> <li>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.</li> <li>Climate change was raised during stakeholder 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 6.6). There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.</li> </ul>
<p><b>Acceptability Statement:</b></p> <p>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. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of routine atmospheric and GHG emissions to a level that is broadly acceptable.</p>

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	Adopted Control(s)	EPS	MC
<b>EPO 13</b> Undertake the Petroleum Activities Program in a manner that will not result	<b>C 5.1</b> Vessel compliance with Marine Order 97 (Marine	<b>PS 5.1</b> Vessels compliant with Marine Order 97 (Marine Pollution Prevention – Air	<b>MC 5.1.1</b> Marine assurance inspection records
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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p>in a substantial change in air quality which may adversely impact on biodiversity, ecological integrity social amenity or human health.</p> <p><b>EPO 14</b> Optimise efficiencies in air emissions and reduce GHG emissions to ALARP and acceptable levels.</p>	<p>Pollution Prevention – Air Pollution) including:</p> <ul style="list-style-type: none"> <li>International Air Pollution Prevention (IAPP) Certificate, required by vessel class</li> <li>Use of low sulphur fuel when available Ship Energy Efficiency Management Plan (SEEMP), where required by vessel class</li> <li>Onboard incinerator to comply with Marine Order 97.</li> </ul>	<p>Pollution) to restrict emissions to those necessary to perform the activity.</p>	<p>demonstrate compliance with Marine Order 97.</p>
	<p><b>C 5.2</b> Reporting of GHG emissions as required by regulatory requirements.</p>	<p><b>PS 5.2</b> GHG emissions reported as per regulatory requirements.</p>	<p><b>MC 5.2.1</b> GHG emissions records demonstrate reporting undertaken as per regulatory requirements.</p>
	<p><b>C 5.3</b> 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.</p>	<p><b>PS 5.3.1</b> Vessel operations planned, where practicable, to minimise fuel consumption and associated GHG/air emissions</p>	<p><b>MC 5.3.1</b> Plan/records show fuel use/emissions have been considered in vessel operations</p>
		<p><b>PS 5.3.2</b> Relevant vessel crew aware of requirement to consider GHG/air emissions in vessel operations.</p>	<p><b>MC 5.3.2</b> Awareness training records include information on consideration of fuel use/GHG emissions for vessel operations.</p>
	<p><b>C 5.4</b> Fuels types selected to reduce expected GHG emissions.</p>	<p><b>PS 5.4</b> Project vessels will not use heavy fuel oil (HFO) or intermediate fuel oil (IFO)</p>	<p><b>MC 5.4.1</b> Records show project vessels use alternative fuels to HFO / IFO</p>
	<p><b>C 5.5</b> Predominantly use DP Bulk Carriers (B-Types) for pipe supply vessels servicing the PV</p>	<p><b>PS 5.5</b> DP Bulk Carriers (B-Types) predominantly used for pipe supply to the PV.</p>	<p><b>MC 5.5.1</b> Records show DP Bulk Carriers predominantly used to supply pipe to PV</p>
	<p><b>C 5.6</b> Primary Installation Contractors for the Petroleum Activities Program will be engaged to identify additional GHG emissions reduction opportunities</p>	<p><b>PS 5.6</b> GHG emissions reduction opportunities identified and implemented where reasonably practicable across Petroleum Activities Program</p>	<p><b>MC 5.6</b> Record of emissions reduction opportunities identification and analysis for implementation practicability.</p>
	<p><b>C 5.7</b> Track and review GHG</p>	<p><b>PS 5.7</b></p>	<p><b>MC 5.7</b></p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	emissions during the Petroleum Activities Program with the objective to identify further opportunities to improve efficiencies if possible	GHG emissions tracking process developed which facilitates identification of further reduction opportunities during installation / Petroleum Activities Program execution and investigates cause of emission spikes.	GHG emissions tracking process

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### 6.7.6 Routine Acoustic Emissions

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.1.4 – Routine Acoustic Emissions														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7 Helicopter Operations – Section 3.8.2 Seabed Intervention Activities – Section 3.9 Trunkline Installation Activities- Section 3.11			<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Protected Species – Section 4.6				<b>Stakeholder consultation</b> 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 geophysical sources during surveys						✓		A	E	-	-	PJ		
Generation of acoustic signals from positioning equipment (transponders)						✓							Broadly Acceptable	
Generation of acoustic signals from DP systems on vessels						✓								EPO 6,11,15, 29
Generation of acoustic signals during seabed intervention and pipelay activities.						✓								
Generation of acoustic signals from helicopters						✓								
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 Trunkline Project Area at any time during the period of the EP. Figure 6-1 shows likely sequencing of seabed intervention and trunkline installation activities and where these will occur along the Trunkline route over time. 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.														
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**Geophysical and Geotechnical Pre-lay Survey Activities**

The noise emitted during geotechnical survey activities is generated by a combination of the geotechnical equipment (sampling and in situ testing operations) and the survey vessel (described below).

Geophysical and geotechnical survey activities may occur within the Trunkline Project Area and Borrow Ground Project Area. Geophysical sources will be used for bathymetric mapping and shallow sub-bottom profiling, penetrating to depths of about 20 m below the seabed. A range of geophysical sources will 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
- magneto meter and sub bottom profiler (SBP)

Sound pressure levels (SPL) for MBES typically range from 210 to 245 dB re 1  $\mu$ Pa @ 1 m, and SSS typically range from 200–235 dB re 1  $\mu$ Pa SPL (Jimenez-Arranz et al., 2020). The frequencies range from about 75 to 900 kHz (Jimenez-Arranz et al., 2020).

**Underwater Positioning Equipment**

An array of long baseline (LBL) and/or ultra-short baseline (USBL) transponders may be installed on the seabed for positioning of mattresses, rock berms or structures on the seabed.

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  $\mu$ Pa at 1 m (Jiménez-Arranz et al., 2020). Transmissions are not continuous but consist of short 'chirps' with a duration that ranges from 3 to 40 milliseconds. Transponders will not emit any sound when on standby, and when required for precise positioning they will emit one chirp every five seconds (estimated to be required for four hours at a time).

**Vessel Operations**

Vessels used for the Petroleum Activities Program are detailed in Section 3. 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. For example, the TSHD, deepwater PV and OCV will operate on DP and support and supply vessels may also engage thrusters when working alongside.

McCauley (1998) measured underwater broadband noise equivalent to approximately 182 dB re 1  $\mu$ Pa 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  $\mu$ Pa at 1 m (Table 6-10).

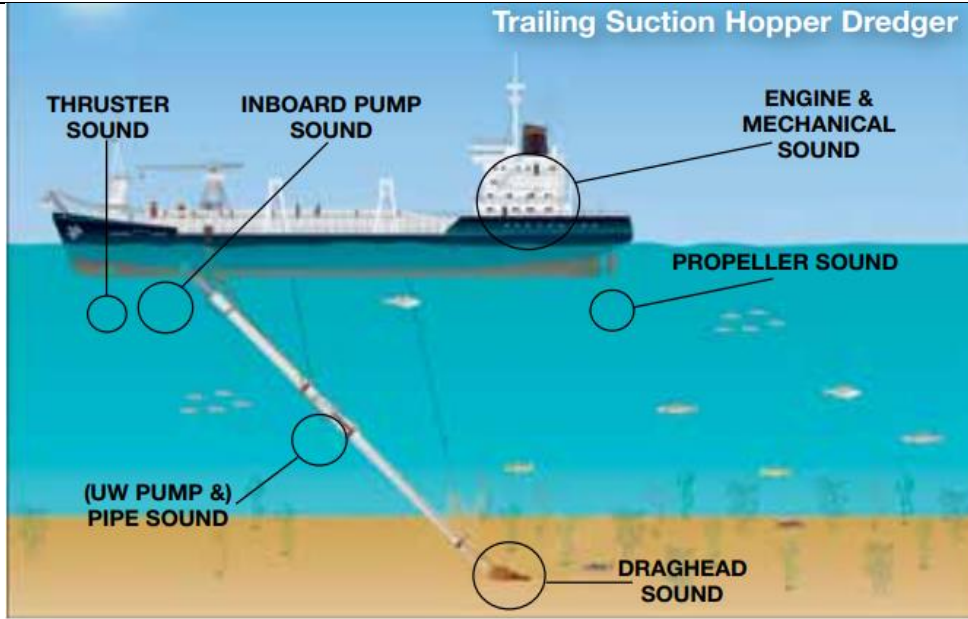
Pipelay vessels operating DP have been reported to have source levels between approximately 168 and 187 dB re 1  $\mu$ Pa at 1 m (SPL) (Nedwell and Edwards, 2004; MacGillivray and Racca, 2006; Johansson and Andersson, 2012; Jiménez-Arranz et al., 2020). Acoustic emissions from the PV *Castorone*, which will be used for the Petroleum Activities Program has been estimated to have a source level of 192 dB 1  $\mu$ Pa based on measurements from a similar surrogate PV (Zykov et al., 2013).

Source levels for the OCV *Boka Falcon* are expected to be similar to the *Skandi Hercules*, which was modelled for Woodside in 2021 (Quijano and McPherson, 2021). Source levels were estimated to be 181 dB 1  $\mu$ Pa (SPL).

Excluding DP, 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.

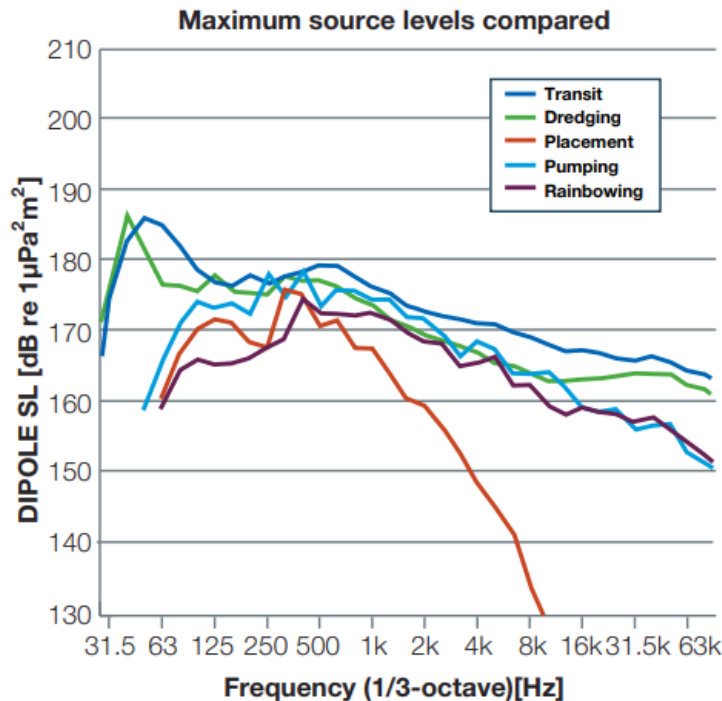
**Seabed Intervention and Pipelay****TSHD**

In addition to acoustic emissions from DP, TSHD activities will generate sound from sediment excavation and placement of the dredged material at the disposal site (Figure 6-4). However, sources of acoustic emissions are most likely to be associated with cavitation noise from TSHD propellers and bow thrusters (de Jong et al., 2010), rather than other sources associated with TSHD (drag head).



**Figure 6-4: Sound sources for TSHD (WODA, 2013)**

Acoustic emissions produced by TSHDs has been measured on a number of occasions, as documented in CEDA (2011). Robinson et al. (2011) measured six TSHDs, stating that sound levels below 500 Hz were in line with those expected for a cargo ship travelling at modest speeds (8 –16 knots). The maximum broadband source sound pressure level (SPL) was 189.9 dB re 1  $\mu$ Pa at 1 m (calculated based on 1/3 octave band levels from 31.6 Hz to 39.8 kHz, (Robinson et al., 2011) (Table 6-10). De Jong et al. (2010) measured underwater sounds produced by seven TSHDs. Results showed that dredging itself did not produce louder sounds than those produced by the dredger during transit between the dredging and placement sites (Figure 6-5). The TSHDs had an estimated maximum SPL around 184 – 188 dB re 1  $\mu$ Pa<sup>2</sup> m<sup>2</sup> (main energy between 100 and 500 Hz).



**Figure 6-5: Comparison of the upper envelope of the measured dipole source level spectra for seven TSHDs, while transiting, dredging, placement, pumping and rainbowing (de Jong et al. 2010, cited in WODA, 2013)**

**Slope Crossing Seabed Preparation**

A construction vessel, equipped with an ROV controlled heavy duty grab, is planned to be used for slope crossing seabed preparation. The noise produced by grab excavation vary substantially with operational stage. Dickerson et al. (2001) measured SPLs at 0.15 km from a grab dredger. The loudest SPLs of 124 dB re 1 µPa were recorded at peak frequencies of 0.16 kHz, when the bucket made impact with the seabed. However, sound levels during this operation will be highly dependent on the material dredged (sand as opposed to gravel) (Robinson et al., 2011). Another investigation carried out on grab dredgers indicates that the activity is relatively quiet and recorded sound levels were just above the background sound at approximately 1 km from the source (Clarke et al., 2002).

Secondary options to achieve the excavation profile are methods such as mass flow excavation, conventional ROV dredging tooling and/or jetting to create the required trench. Acoustic emissions generated from these activities are expected to be similar to the ROV grab or TSHD described above.

**Pipelay and Rock Placement**

During installation of the trunkline using the deepwater PV, pipelaying is unlikely to have a noticeable contribution to the sound field as the largest contribution comes instead from the vessel DP, supply vessels and tugs (Johanson and Andersson 2012; Jiménez-Arranz et al., 2020). Similarly, when comparing the sound levels produced during rock placement and normal operations by a pipelay vessel there was no noticeable increase in noise, which again suggests that sound levels are dominated by vessel noise (Nedwell and Edwards 2004; Jiménez-Arranz et al., 2020).

A SWLB may operate for a short distance into Commonwealth waters before handover to the PV. Anchored pipe-laying barges, such as the SWLB, generate lower sound levels than the anchor handling tugs and support vessels that assist them. For example, pipelay barges have source levels between approximately 166 and 181 dB re 1 µPa at 1 m (SPL) (Hannay et al. 2004; MacGillivray and Racca 2006), whereas anchor handling tugs (AHTs) working with the barges have measured source levels ranging between approximately 164 to 190 dB re 1 µPa at 1 m (SPL) depending upon vessel size and power (Hannay et al. 2004; Jiménez-Arranz et al. 2020). It is noted that these AHT levels include a 72 m long AHT which is larger and more powerful than the AHTs that will be used for the Petroleum Activities Program.

**Helicopter Operations**

Helicopter noise is emitted to the atmosphere during routine helicopter flights to support operations (Section 3.8.2). Sound emitted from helicopter operations is typically below 500 Hz (Richardson et al., 1985). Richardson et al. (1995) reports that helicopter sound is audible in air for four minutes before it passed over underwater hydrophones, but detectable underwater for only 38 seconds at 3 m depth and 11 seconds at 18 m depth. Noise levels reported for a Bell 212 helicopter during fly-over was reported at 162 dB re 1 µPa and for Sikorsky-61 is 108 dB re 1 µPa at 305 m (Simmonds et al., 2004).

**Table 6-10: Sources of aspect, and the operating frequency and noise levels**

Source of aspect	Operating frequency (kHz)	Source Level (@1 m)		Sound category	Reference
		SPL (L <sub>p</sub> )	PK (L <sub>pk</sub> )		
Pre-lay surveys	0.07-9	210-245	-	Impulsive	Jimenez-Arranz et al. (2020)
TSHD	0.3-20	186 -188	-	Continuous	Thomsen et al. (2009) Robinson et al. (2011) CEDA (2011) WODA (2013)
Positioning equipment	21-31	180-206	-	Impulsive	Jimenez-Arranz et al. (2020)
Vessel operations (DP)	0.2-1	181-186	-	Continuous	McCauley (1998, 2005) Hannay (2004) Quijano and McPherson (2021)
Helicopter operations	0.5	162	-	Continuous	Simmonds et al. (2004)

**Cumulative Noise Sources**

Vessels associated with pre-lay and post-lay seabed intervention, pipelay and ancillary activities are identified in Section 3.7. Several vessels may be operating concurrently, as identified in Section 6.2.1. Figure 6-1 shows seabed intervention activities are planned to be performed with single vessels, due to short activity durations and vessel mobility for refuelling / supplies etc. The Trunkline installation scope is the only part of the Petroleum Activities Program that will routinely have multiple vessels operating concurrently. It is for this reason that the worst-case scenario for cumulative vessel noise is considered to be during pipelay throughout the Trunkline Project Area when the PV is undertaking pipelay operations; a B-Type vessel is performing resupply alongside the PV; and an Offshore Supply Vessel (OSV) under DP is also alongside the PV. A number of scenarios were modelled for these sources in combination to inform the impact assessment. The modelling is described below.

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This worst-case scenario for cumulative vessel noise associated with Trunkline installation does not include the PV refuelling vessel nor an additional OCV which might be present in some sections to assist with touchdown monitoring. This is because, given the OCV will follow behind the PV at a distance of 2.5 – 3.5 km, the cumulative contribution of this additional vessel will be very small and the extent of predicted impacts (i.e. behavioural disturbance) is expected to only change fractionally from the modelled results of the normal pipelay vessel spread. The PV refuelling vessel is not included as this is typically not a DP vessel.

Figure 6.1 shows there may be concurrent operations between Trunkline installation scopes; namely the PLET foundation installation and Trunkline installation. In this case a construction vessel (or similar) could be present around KP 433 in permit area WA-61-L at the same time as the PV spread (including pipe supply vessel and general supply vessel).

Concurrent operations may also occur between activities in this Petroleum Activities Program and the Scarborough Drilling and Completions campaign. As shown in Figure 6.1 this would be in WA-61-L and consist of a DP MODU and supply vessel (refuelling / bunkering also occurs from the supply vessel). A x-mas tree installation vessel may also be present during the D&C program (if x-mas trees are not installed from the MODU); however, the vessel and MODU cannot be over the same well at the same time, and the vessel is only present for a short period of time (x-mas tree installation usually takes less than one day per well). For these reasons, the x-mas tree installation vessel has been assessed separately and is not expected to contribute to cumulative impact(s).

Cumulative noise sources from concurrent vessel operations can be summarized as shown in Table 6-11.

**Table 6-11: Concurrent activities contributing to cumulative underwater vessel noise**

Concurrent Activities	Approx. Timing & Location	Vessels
Pre-lay survey & Drilling & Completions*	Approx. Sep 2023 ~ 4 days** PLET ~KP 433	Survey vessel  DP MODU + supply vessel
PLET foundation installation & Trunkline Installation & Drilling and Completions*	April 2024 – 2 weeks PLET ~KP 433	Construction vessel  DP Pipelay Vessel + pipe supply vessel + support vessel  DP MODU + supply vessel
Pre-commissioning & Drilling and Completions*	April / May 2024 – 1 – 3 months depending on pre-commissioning methodology dry vs. wet PLET ~KP 433	Construction vessel  DP MODU + supply vessel
Post-lay survey & Drilling and Completions*	Approx. June 2024 ~ 4 days** PLET ~KP 433	Survey vessel  DP MODU + supply vessel

\*Drilling & Completions activities covered under the Scarborough Drilling and Completions Environment Plan.

\*\*Duration of concurrent activities overlap only, not indicative of timing of the whole activity

**Detailed Impact Assessment**

**Assessment of Potential Impacts**

Routine acoustic emissions from the sources described above have the potential to result in the following impact(s):

- a change in ambient noise
- a change in fauna behaviour
- injury and/or mortality to fauna.
- changes to the functions, interest or activities of other users.

**Potential Impact of Noise**

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

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

The extent of the impacts of underwater noise on marine fauna will depend upon the frequency range and intensity of the noise produced, and the type of acoustic signal.

#### Sound Propagation

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

#### **Ambient Noise**

Ambient noise levels in the Operational Area may be elevated during the Petroleum Activities Program. Underwater noise surveys in the region detected marine fauna vocalisations and anthropogenic sources including vessel noise; seismic survey signals; mooring noise artefacts (McCauley, 2011). Although ambient noise levels in the Operational Area have not been recorded, they are expected to be similar to published ambient noise levels. The Operational Area (Trunkline Route KP 32 to KP 50 and Offshore Borrow Ground) closer to shore where the TSHD vessel will be used are in proximity to existing ports, and a small portion of the Trunkline Project Area also overlaps the Pilbara Port Authority Management Area. These areas are already anticipated to receive anthropogenic sources of noise. Therefore routine acoustic emissions will result in a small incremental increase in ambient noise with no lasting effect.

#### **Acoustic Modelling**

To assess the potential magnitude and extent of impacts from underwater noise produced during the Petroleum Activities Program, Woodside commissioned JASCO Applied Sciences (JASCO) to model sound propagation for a range of vessel scenarios during pipelay activities. This modelling study (Connell et al., 2022) considered specific components of the Petroleum Activities Program for representative scenarios within the pygmy blue whale (PBW) migration BIA. Three types of vessels were identified and used to model four sources: the PV undertaking pipelay operations; a B-Type vessel either performing resupply alongside the PV or bunkering alongside a tanker under DP; and an Offshore Supply Vessel (OSV) under DP alongside the PV. These four activities are considered in different combinations for a total of twelve scenarios, including step away scenarios where the B-Type bunkering location was progressively moved farther from the other vessels.

These scenarios were chosen as credible worst case for underwater noise propagation due to the PV vessel spread being the largest of the Petroleum Activities Program as well as the DP pipelay vessel being the largest single vessel with the most significant thruster configuration. As shown in Figure 6-1, other activities in the Petroleum Activities Program are planned to involve only a single vessel, which would be of smaller size than the DP pipelay vessel (PV).

The modelling study specifically assessed distances from operations where underwater sound levels reached thresholds corresponding to behavioural response, impairment (TTS) and injury (PTS). The animals considered here included low-frequency (LF), high-frequency (HF), and very high-frequency (VHF) cetaceans, turtles, and fish including fish larvae and eggs.

The modelling methodology considered the source levels of the individual thrusters for the PV, B-Type, and OSV, as well as environmental properties that effect sound propagation. Estimated underwater acoustic levels are presented as sound pressure levels (SPL), and accumulated sound exposure levels (SEL) as appropriate for non-impulsive (continuous) noise sources. In this study, the duration of the SEL accumulation was defined as integrated over a 24-hour period.

The four activities are considered in different combinations along the pipelay track across the PBW migration BIA, for a total of twelve scenarios, six of which were also considered with animat modelling. Five of these scenarios are the B-Type vessel bunkering in isolation at increasing distances (“stepped away”) from the PV. These five scenarios are added to normal operations with the PV to determine any overlap with marine mammal noise effect thresholds.

#### **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 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) (refer Appendix K)

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 in a southbound direction. Animal movement modelling was considered for the subset of acoustic modelling scenarios

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that included “normal operations” (PV, B-type, and OSV under DP) and B-type bunkering at various step away distances. The distribution of distances of animats predicted to be exposed to sound levels above threshold was used to calculate the 95<sup>th</sup> percentile exposure range (ER<sub>95%</sub>), and noise effect metrics included SEL<sub>24h</sub> and SPL (Connell et al., 2022) (refer Appendix K)

**Marine Mammals/Cetaceans**

Twelve cetacean species may be present within the Operational Area, including LF cetaceans such as humpback whales and pygmy blue whales, and HF cetaceans including Indo-Pacific and spotted bottlenose dolphins (Section 4.6.3). The following species have BIAs (Section 4.6.3 and Figure 4-12, Figure 4-13) that intercept the Operational Area:

- Pygmy blue whale - migration BIA occurs in deeper waters of the Trunkline Project Area.
- Humpback whale - migration BIA occurs in the nearshore waters of Trunkline Project Area and the Offshore Borrow Ground Project Area.

The distribution range to the west of the pygmy blue whale migration BIA is also considered in the 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; permanent threshold shift (PTS) and temporary threshold shift (TTS), physical damage and stress (NRC, 2003; 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, TTS and PTS for cetaceans as a result of impulsive and continuous noise sources are outlined in Table 6-12. 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; L<sub>E,24h</sub>) from Southall et al. (2019) for the onset of permanent threshold shift (PTS) - 199 (LF cetaceans) and 198 (HF cetaceans) SEL<sub>24h</sub> (dB re 1 µPa<sup>2</sup>.s) and temporary threshold shift (TTS) – 179 (LF cetaceans) and 178 (HF cetaceans) SEL<sub>24h</sub> (dB re 1 µPa<sup>2</sup>.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; L<sub>p</sub>) for non-impulsive sound sources.

**Table 6-12: Thresholds for PTS, TTS and behavioural response onset in low-frequency (LF) and high-frequency (HF) cetaceans for impulsive and continuous noise**

Hearing group	Impulsive			Continuous		
	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 µPa <sup>2</sup> .s)	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 µPa <sup>2</sup> .s)	Behavioural response (dB re 1 µPa)	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 µPa <sup>2</sup> .s)	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 µPa <sup>2</sup> .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, 2019; NOAA, 2019).

Acoustic emissions during pipelay activities are likely to have the greatest impact to marine fauna, given the estimated source levels for the PV (~190-192 dB re 1 µPa<sup>2</sup> m<sup>2</sup> s) and the duration of the pipelay activity. Pipelay will also cross the pygmy blue whale migration BIA, over an estimated period of approximately two months, and then carry on through the pygmy blue whale distribution range on the western side of the migration BIA to the end of the trunkline route adjacent to the FPU location. Pygmy blue whales migrate as solitary animals or in small groups along the continental slope and in deeper, offshore waters north of North West Cape, typically in water depths between 500 m and 1000 m on the way to and from the migration terminus in the Banda and Molucca seas, Indonesia, where calving is understood to occur (Double et al., 2014). The northern migration typically passes north-western Australia between approximately April to July with the return southern migration between October and January. As described in Section 4.6.3, the

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migration BIA represents the area of core migratory routes for pygmy blue whales. There is likely to be occasional individual or small groups of whales transiting through the distribution range during the northbound or southbound migration seasons. The likelihood of encountering migrating or foraging pygmy blue whales is considered low with respect to the western extent of the pygmy blue whale distribution range.

*Results – Acoustic Modelling*

Modelling of sound propagation loss for the PV on DP (Scenario 1), in the Trunkline Project Area at a location within the PBW migration BIA, predicted that noise levels would drop below 120 dB re 1 µPa (behavioural response threshold for continuous noise sources; Table 6-12) within 14.5 km. The modelling also estimated propagation of combined noise from the PV during pipelay, along with B-Type and OSV alongside, both operating on DP (“normal operations” - Scenario 2). The modelling predicted combined noise levels from all three vessels would drop below 120 dB within 15.7 km. The maximum distance to the behavioural response threshold was 16.5 km (for Scenario 4 - normal operations + B-Type Bunkering at step away location 1, 10 km away), (Table 6-13). The modelling determined that for there to be no overlap of behavioural response zones for LF cetaceans (i.e. no overlap of the 120 dB isopleths and a larger onset area [R<sub>max</sub> km<sup>2</sup>]) between the normal operations and the B-Type bunkering, there needs to be 25 km of separation between the two operations (Connell et al., 2022).

Considering the NMFS (2018) SEL<sub>24h</sub> TTS threshold criteria for LF cetaceans (179 dB re 1 µPa<sup>2</sup>.s), TTS onset could occur within 0.9 km from the PV on DP (Scenario 1) or 1.26 km from the combination of vessels (Scenario 2) (Connell et al., 2022). For LF cetaceans, the maximum distance to the PTS onset threshold was 150 m for any scenario. The maximum distance to TTS onset threshold from any scenario was 1.32 km (Table 6-13).

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 or humpback whale behaviour. The SEL<sub>24h</sub> criterion is a cumulative metric that reflects the dosimetric impact of sound energy accumulated over a 24-hour period and assumes that an animal is consistently exposed to such noise levels at a fixed location. The radii that correspond to SEL<sub>24h</sub> 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 (Connell et al., 2022). It is highly unlikely that PTS and TTS thresholds would be exceeded given the small onset PTS and TTS range 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 and humpback whale transiting through the Operational Area.

For HF cetaceans, TTS onset could occur within 150 m for both Scenario 1 and PTS threshold for HF cetaceans was not reached within the limits of the modelled resolution (20 m) for any scenario modelled.

**Table 6-13: Maximum predicted horizontal distances (R<sub>max</sub>) to PTS, TTS and behavioural response thresholds in cetaceans, for all 12 scenarios**

Hearing group	Sound exposure threshold	R <sub>max</sub> distance (km)
<b>PTS</b>		
LF cetaceans	199 dB re 1 µPa <sup>2</sup> .s (SEL <sub>24h</sub> )	0.15
HF cetaceans	198 dB re 1 µPa <sup>2</sup> .s (SEL <sub>24h</sub> )	-
<b>TTS</b>		
LF cetaceans	179 dB re 1 µPa <sup>2</sup> .s (SEL <sub>24h</sub> )	1.32
HF cetaceans	178 dB re 1 µPa <sup>2</sup> .s (SEL <sub>24h</sub> )	0.15
<b>Behavioural response</b>		
LF cetaceans	120 dB re 1 µPa (SPL)	16.5
HF cetaceans		

A dash indicates the level was not reached within the limits of the modelled resolution (20 m).

*Results – ANIMAT Modelling*

Table 6-14 presents the animat modelling (JASMINE) results. For normal operations of the pipelay installation vessel activities, TTS onset probability of exposure of 88% within the 95th percentile exposure range (ER<sub>95%</sub>) 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 11% within the 95th percentile exposure range (ER<sub>95%</sub>) 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 ER<sub>95%</sub> tends to be comparable to that predicted by acoustic propagation modelling. The ER<sub>95%</sub> to the behavioural response SPL threshold ranged from 12.77 to 13.28 km. There was no significant variation in exposure range between the six modelled scenarios (Connell et al., 2022).

**Table 6-14: Summary of animat simulation results for migrating pygmy blue whales indicating the maximum of the 95<sup>th</sup> percentile exposure ranges (in km) over all scenarios. The maximum probability of animats being exposed above threshold within the ER<sub>95%</sub> is also provided for all modelled scenarios**

Threshold		ER <sub>95%</sub>		Scenario #	Scenario description	
Description	Threshold level (dB)	Distance (km)	Probability of exposure (%)			
TTS	SEL <sub>24h</sub>	179 <sup>1</sup>	0.03	88	2	Normal operations – PV, B-Type, and OSV all under DP
PTS	SEL <sub>24h</sub>	199 <sup>1</sup>	0.01	11		
Behavioural response		120 <sup>2</sup>	13.28	77	4	Normal operations + B-Type bunkering at step away location 1

<sup>1</sup> LF-weighted SEL<sub>24h</sub> (L<sub>E,24h</sub>; dB re 1 µPa<sup>2</sup> · s)

<sup>2</sup> SPL (L<sub>p</sub>; dB re 1 µPa)

*Pygmy Blue Whale Migration BIA*

The Blue Whale Conservation Management Plan (Action Area 2) states that anthropogenic noise in BIAs should be managed such that any blue whale continues to utilise the area without injury (Commonwealth of Australia, 2015a). Although TTS in cetaceans has previously been regarded as hearing impairment, not injury, advice from NOPSEMA and DAWE is that TTS should be considered a form of injury to pygmy blue whales and this should be prevented within the BIAs. However, as demonstrated above 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 follow the pipelay vessel for 24 hours. 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 pipelay activities and any other continuous noise sound sources from other installation related vessel-based activities.

The Operational Area for the Petroleum Activities Program intersects the pygmy blue whale migration BIA (from KP200 to KP274), and also overlaps with the broader pygmy blue whale distribution range (refer to (Figure 4 11)). Considering this overlap, as well as the recorded presence and satellite tracking of both north and south bound tagged individuals in the Operational Area (Thums et. al. (2022)), it is likely that transient individuals or small groups are occasionally in and around the Operational Area during migratory north and south seasons (April to July and October to January, respectively) (McCauley, 2011; Gavrilov et al., 2018; Thums et al., 2022). Significant numbers of pygmy blue whales are not expected to be encountered, particularly outside peak periods for northbound or southbound migrations (Figure 4 11).

The continental slope crossing seabed preparation activity requires vessel use and excavation. The vessel will be an OCV similar to the *Skandi Hercules* as described above, with a source of level of ~181 dB re 1µPa (SPL). This activity will be completed prior to pipelay and there will be no temporal overlap. Elevated sound levels have been observed when a grab bucket makes impact with the seabed (Dickerson et al., 2001), however and noise levels are largely dependent on the seabed substrate. Given that the seabed material along that section of the trunkline is sand/soft sediment (Section 4.4.3), significant noise emissions during the grab operations or other excavation methods proposed are not anticipated and the activity is not expected to exceed modelled noise levels and predicted noise exposure ranges for PTS, TTS and behavioural response for pipelay activities.

Whilst the Trunkline Project Area overlaps part of the pygmy blue whale migration BIA as described above, there is no overlap with known foraging areas for the species, as defined in the Blue Whale Conservation Management Plan (CMP).

In September 2021, the Department of Agriculture, Water and the Environment (DAWE) published guidance on key terms within the CMP, which provided a definition of ‘a foraging area’ and noted the potential for opportunistic foraging and feeding to occur outside these designated foraging areas. Pygmy blue whales may engage in opportunistic foraging during both northbound and southbound migrations, so there is the potential for this activity to occur in the Trunkline Project area, particularly where it overlaps the migration BIA (Thums et. Al. 2022). There are limited data to indicate that the area of the Exmouth Plateau overlapped by the Operational Area (Figure 4-15) represents an area where opportunistic foraging by pygmy blue whales occurs regularly (see Section 4.6.3)

*Pygmy Blue Whale Distribution Range*

The pipelay activities and other installation related vessel-based activities will extend through the pygmy blue whale distribution range on the western side of the migration BIA to the end of the trunkline route adjacent to the FPU location. The likelihood of encountering migrating or foraging pygmy blue whales is considered low with the occasional individual or small group of whales transiting through the distribution range during the northbound or southbound migration seasons see Section 4.6.3).

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Potential behavioural disturbance to pygmy blue whales within the migration BIA and distribution range is limited to any overlap with the northbound (April to July) and southbound (October to January) migratory seasons.

#### *Humpback Whale BIA*

Humpback whales are expected to be encountered during both pre-lay/post-lay seabed intervention (trenching and material disposal and offshore borrow ground dredging and backfill) and pipelay, particularly should these activities occur during annual migrations (July (northbound) and late August/September (southbound)). CEDA (2011) notes the scarcity of studies quantifying noise impacts from dredging, and any documented effects have been limited to behavioural response. As noted in Figure 6-5, elevated acoustic emissions do occur during dredging, however these are not expected to impact marine mammals any greater than acoustic emissions from transiting vessels (de Jong et al., 2010) and will be within the modelled acoustic footprint of vessel operations during pipelay described above. PTS and TTS impacts are therefore considered highly unlikely. Behavioural response may result in a deviation in course during migration, which is expected to be insignificant in the context of the long distances over which individuals migrate (thousands of kilometres). Marine mammals that are frequently exposed to sounds such as vessel noise may also habituate and adapt to this noise (Richardson et al. 1995; NRCC, 2003). This may be the case for the humpback whale population that regularly passes through areas of significant shipping traffic during their migrations.

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

#### *Non-pipelay related vessel activities*

Non-pipelay related vessel-based activities will occur along the proposed trunkline route at various times before, during and after the actual pipelay. Such vessel-based activities will be separated spatially and temporally. The behavioural onset range will be markedly reduced as compared to the worst-case credible modelled results for the pipelay, .i.e. 16 km behavioural response onset range.

If such activities occur within the migration BIAs for pygmy blue whales and humpback whales and during migratory seasons, there is likely to be a behavioural response from individuals or groups of whales transiting in relatively close proximity to vessel-based activities. The same applies to the pygmy blue whale distribution range to the west of the migration BIA though likelihood of encountering whales is much lower (refer to Section 4.6.3.1). Migrating pygmy blue whales and humpback whales are surrounded by open water with no restrictions (such as shallow waters, embayments) on an animal's ability to avoid the activities. Consequently, pygmy blue whales and humpback whales transiting through the area, may deviate slightly from their migration route, but can continue on their migration pathway without any biologically significant impacts.

#### **Marine Reptiles**

Five species of marine turtle may occur in the Operational Area: flatback, green, hawksbill, loggerhead and leatherback turtles. The Operational Area overlap interesting Habitat Critical and interesting buffer BIAs for the flatback, green and hawksbill turtle around the Dampier Archipelago and Montebello Islands (Section 4.6.2).

#### *Species Sensitivity and Thresholds*

There is a paucity of data regarding responses of marine turtles to continuous 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  $\mu$ Pa (SPL), the turtles increased their swimming activity and above 175 dB re 1  $\mu$ Pa (SPL) they began to behave erratically, which was interpreted as an agitated state.

The sound exposure thresholds for marine turtles are summarised in Table 6-15 below. No numerical thresholds have been developed for impacts of continuous sources (e.g. vessel noise) on marine turtles. A Popper et al. (2014) review

assessed thresholds for marine turtles and found qualitative results that the risk of TTS was moderate for near field exposure, and low for both intermediate and far field exposure (Popper et al., 2014).

**Table 6-15: Thresholds for PTS, TTS and behavioural response onset in marine turtles for impulsive and continuous noise**

Hearing group	Impulsive			Continuous		
	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 µPa <sup>2</sup> .s)	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 µPa <sup>2</sup> .s)	Behavioural response (dB re 1 µPa)	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 µPa <sup>2</sup> .s)	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 µPa <sup>2</sup> .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 (NSF 2011), + behavioural disturbance threshold (McCauley et al. 200).

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

**Impact Assessment**

The Recovery Plan for Marine Turtles (Commonwealth of Australia, 2017a) 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 6-15, it is reasonable to expect that marine turtles may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activities Program.

Turtles may occasionally be present in deeper waters of the Operational Area but are more likely to be encountered closer to the Dampier Archipelago where they may be present foraging year-round. Increased numbers of marine turtles may be present, albeit still in low numbers within the Operational Area, during interesting periods, and may be exposed to acoustic emissions from vessels during the trenching and material disposal and offshore borrow ground dredging and backfill. However, works of this nature closer or within sensitive turtle area (BIAs and Habitat Critical to the survival) will be limited to a period of months (Section 4.6.2) reducing the potential for impact at the individual and population level.

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

As described above, acoustic modelling was conducted by JASCO based on cumulative noise from three vessels operating concurrently (Connell et al., 2021). Based on the application of the multiple SEL<sub>24h</sub> thresholds (Finneran et al., 2017), PTS was not predicted to occur within the modelling resolution (20 m), and turtles could potentially experience TTS within 150 m (Table 6-16). However, marine turtles within the Operational Area are expected to be transient, and unlikely to remain with 150 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 6-16: Maximum predicted horizontal distances ( $R_{max}$ ) to PTS and TTS thresholds in marine turtles**

Hearing group	Sound exposure threshold	$R_{max}$ distance (km)*
Marine turtles	<b>PTS</b>	
	220 dB re 1 $\mu\text{Pa}^2\cdot\text{s}$ (SEL <sub>24h</sub> )	-
	<b>TTS</b>	
	200 dB re 1 $\mu\text{Pa}^2\cdot\text{s}$ (SEL <sub>24h</sub> )	0.15

N.B. A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

During survey activities, the vessel will be continually moving; therefore, any behavioural responses would be temporary and are unlikely to negatively affect individual fitness or breeding success. Additionally, the duration of the activity is limited to days and will not be continuous within the Trunkline Project Area closer to islands/shore, where interesting BIAs are located.

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.

**Fish, Sharks and Rays**

A number of demersal and pelagic fish species will be present within the Operational Area. 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 Operational Area will support a wide diversity of species. Migratory species such as whale sharks may be present, particularly given a BIA for foraging overlaps of the Trunkline Project Area (~ KP 72 to KP 199).

**Species Sensitivity and Thresholds**

The majority of fish species detect sounds from <50 Hz up to 500-1500 Hz (Popper and Hawkins, 2019). A smaller number of species can detect sounds over 3 kHz, while very few species can detect ultrasound over 100 kHz (Ladich and Fay, 2013). The critical issue for understanding whether an anthropogenic sound will affect the hearing of a fish is whether it is within the hearing frequency range of the fish and loud enough to be detectable above background ambient noise.

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 scomid fish (mackerel and tunas) or have a much-reduced swim bladder (e.g. flat fish) tend to have a relatively low auditory sensitivity.

Popper et al. (2014) developed sound exposure guidelines for fish, considering differences in fish physiology (Table 6-17).

**Table 6-17: Thresholds for PTS, TTS and behavioural response onset in fish, sharks and rays for impulsive and continuous noise**

Hearing group	Impulsive			Continuous		
	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 $\mu\text{Pa}^2\cdot\text{s}$ )	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 $\mu\text{Pa}^2\cdot\text{s}$ )	Behavioural response (dB re 1 $\mu\text{Pa}$ )	PTS onset thresholds: SEL <sub>24h</sub> (dB re 1 $\mu\text{Pa}^2\cdot\text{s}$ )	TTS onset thresholds: SEL <sub>24h</sub> (dB re 1 $\mu\text{Pa}^2\cdot\text{s}$ )	Behavioural response (dB re 1 $\mu\text{Pa}$ )
Fish: no swim bladder	216	186	(N) High (I) Moderate (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) Moderate (I) Moderate (F) Low
Fish: swim bladder not	203	186	(N) High (I) Moderate	(N) Low (I) Low	(N) Moderate (I) Low	(N) Moderate (I) Moderate

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involved in hearing			(F) Low	(F) Low	(F) Low	(F) Low
Fish: swim bladder involving hearing	203	186	(N) High (I) High (F) Moderate	170 dB rms SPL for 48-hours	158 dB rms SPL for 12-hours	(N) High (I) Moderate (F) Low
<p><i>Impulsive noise:</i> All criteria are presented as sound pressure, even for fish without swim bladders, since no data for particle motion exist.</p> <p><i>Continuous noise:</i> rms SPL: root mean square of time-series pressure level, useful for quantifying continuous noise sources. Relative risk (high, moderate, or low) is given for animals at three distances from the source defined in relative terms as near (N), intermediate (I), and far (F). Source: Popper et al. (2014)</p>						

**Impact Assessment**

Sound produced by the vessels on DP could cause recoverable injury to some fish species with a swim bladder involved in hearing, but only if the fishes are in very close proximity to the sound source, within 280 m, for 12-hours. Similarly, TTS effects could occur within 300 m of the vessels if the fish remained within this distance for 48-hours.

It is expected that potential impact to demersal and pelagic fish and sharks/rays is 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.

The Operational Area overlaps a small proportion of the foraging BIA for whale sharks between about KP 72 and KP 199 and therefore they may be seasonally present between March and November (with the annual peak aggregation at Ningaloo Reef between April and May) (Figure 4-8), as demonstrated by acoustic detections of tagged whale sharks at the North Rankin A and Goodwyn A platforms during two periods—June to July and October to January (Thomson et al. 2021). This overlap represents a very small proportion of the overall area of the BIA (0.22%), and the Operational Area is located at least 215 km from the whale shark foraging (high density prey) BIA adjacent to Ningaloo Reef. Behavioural disturbance to whale sharks as a result of vessel noise may result in a temporary deviation on their migration route, which covers a wide area and is not spatially restricted. The potential extent of disturbance effect for vessels associated with pipelay is expected to be considerably smaller than predicted for marine mammals (up to 13.28 km predicted for a migrating pygmy blue whale using animat movement modelling).

**Commercial fish spawning**

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

- red emperor – depth range 10–180 m, spawns Sept–June (bimodal peaks Sept–Nov and Jan–Mar);
- rankin cod – depth range 10–150 m, spawns June–Dec and Mar (peak Aug–Oct);
- goldband snapper – depth range 50–200 m, spawns Oct–May;
- bluespotted emperor – depth range 5–110 m, spawns Jul–Mar;
- ruby snapper – depth range 150–480 m, spawns Dec–Apr (peak Jan–Mar); and
- spanish mackerel – depth range 1 m to at least 50 m, spawns Sept–Jan.

It is believed that all of these species undergo group spawning throughout their range, rather than aggregating at specific locations. The Operational Area overlaps the depth ranges for these key indicator commercial fish species, and the timing of activities means that there would be overlap with peak spawning periods for a number of these species. However, as described above, the potential impact of acoustic emissions on demersal and pelagic fishes is expected to be limited to a short-lived behavioural response confined to a few hundred metres from the project vessels. As such, the potential for the Petroleum Activities Program to impact spawning of key indicator commercial fish species is assessed as being extremely low.

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

**AMPs**

The North-west Marine Parks Network Management Plan (DNP, 2018a) lists the natural values of the Montebello and Dampier AMPs as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act, as well as BIAs that include seasonal breeding habitat for seabirds, interneresting habitat for marine turtles and a migratory pathway for humpback whales. The Montebello AMP also includes foraging, mating, and nesting habitat for marine turtles and foraging habitat for whale sharks, while the Dampier AMP includes foraging habitat for seabirds.

For activities occurring within the Montebello Marine Park, and adjacent to the Dampier Marine Park, the short-term and transient nature of activities associated with acoustic emissions will not be inconsistent with the objective of the Multiple Use Zone (VI) to provide for ecologically sustainable use and the conservation of ecosystems, habitats and native species, or for the Habitat Protection Zone (IV) to provide for the conservation of ecosystems, habitats and native

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species in as natural a state as possible, while allowing activities that do not harm or cause destruction to seafloor habitats. The values identified for both these Marine Parks including BIAs for marine turtles will not be impacted given the significant distance from sensitive locations. Therefore, no impacts are expected to the cultural values of the AMP as those are intrinsically linked to the natural values described above. Impacts from acoustic emissions are therefore not inconsistent with the objectives of the North-west Marine Parks Network Management Plan or the zoning of the Montebello and Dampier AMPs (DNP, 2018a).

**Cumulative Impacts**

Table 6-1 outlines potential concurrent activities that will contribute to cumulative underwater noise levels during the Petroleum Activities Program, which involves use of the following series of vessels:

- Survey vessel + [DP MODU + supply vessel];
- Construction vessel + [DP Pipelay Vessel + pipe supply vessel + support vessel] + [DP MODU + supply vessel]; and
- Construction vessel + [DP MODU + supply vessel].

Of these three different potential concurrent activities, scenario 2 represents the worst-case with respect to cumulative underwater noise levels. At the most western extent of the Trunkline Project Area (PLET location) the trunkline route passes within ~2.5 km of the nearest Scarborough development well (Well 5). As described in Section 6.2.1 and outlined in Table 6-1, there is the potential for concurrent activities to occur, with the pipelay vessels (PV, B-Type and OSV) laying the trunkline concurrently with the installation of the PLET using an OCV, and drilling via a MODU. Depending on well sequencing, the pipelay vessels may pass within 2.5 km of a MODU on DP, should it be engaged in drilling operations at the Well 5 location. These three concurrent activities (PLET foundation installation, trunkline installation, and drilling/completions) are expected to occur around April 2024 for a period of several weeks (refer Table 6-1). The sequence for drilling and completions is subject to change due to well drilling time efficiencies, waiting on weather, xmas tree installation sequence and other factors. The other Scarborough development wells are located >7.5 km from the trunkline route, and therefore noise from the MODU and support vessels is unlikely to result in any significant cumulative impacts.

If this concurrent scenario eventuates, there is the potential for cumulative impacts from underwater noise emissions. The timing of these three concurrent activities (April 2024 for a period of several weeks) may overlap the shoulder period of northbound migration for pygmy blue whales through the NWMR (April to July).

It is important to note that the concurrent presence of the pipelay vessels, MODU and OCV within ~3 km of each other would not represent a tripling of impacts underwater acoustic emissions in adjacent waters (i.e. impacts do not scale linearly). This is evident from modelling and measurement studies of composite underwater noise footprints of MODUs, support vessels and construction vessels in the Chukchi Sea in the Arctic (Quijano et al. 2018).

The combined sound fields are likely to result in a marginal increase in the maximum range to the behavioural response threshold for LF cetaceans (i.e. >16 km) as compared to the range for the single largest activity. As Well 5 and the PLET location are at least 50 km from the western boundary of the pygmy blue whale migration BIA but within the distribution range, where there is a lower likelihood of encountering either migrating or foraging pygmy blue whales even during peak periods of the migration seasons. Migrating pygmy blue whales are surrounded by open water with no restrictions (such as shallow waters, embayments) on an animal's ability to avoid the activities. Consequently, pygmy blue whales transiting through the area, may deviate slightly from their migration route, but would be otherwise impeded from continuing on their migration pathway without any biologically significant impacts.

It is noted that in addition to the three vessels and four sources modelled (Connell et al., 2022), an additional OCV with work class ROV (similar to the *Fugro Etime*) may be required to monitor touchdown of the trunkline between approximately KP 280 to 365. However, given the OCV will follow behind the PV at a distance of 2.5 – 3.5 km the cumulative contribution of this additional vessel will be very small and the extent of predicted impacts (i.e. behavioural disturbance) is expected to only increase slightly from the modelled scenarios.

**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	No lasting effect	Slight (E)
Marine reptiles	Change in fauna behaviour	High value species	No lasting effect	Slight (E)

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Fish, sharks and rays	Change in fauna behaviour Hearing impairment to fauna	High value species	No lasting effect	Slight (E)
<b>Overall Impact Significance Level:</b> The overall impact significance level for routine acoustic emissions is E based on no lasting effect to the high value receptors (marine mammals, marine reptiles, fish, sharks and rays). The impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.				

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation Codes and Standards</b>				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures <sup>28</sup> : <ul style="list-style-type: none"> <li>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.</li> <li>Vessels will not approach closer than 50 m for a dolphin or and/or 100 m for a whale (with the exception of animals bow riding).</li> <li>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.</li> </ul>	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 <b>C 6.1</b>
Vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks can potentially reduce the underwater noise footprint of a vessel	Legislative control for state waters, Whale Shark Interaction Protocol, being adopted for the Petroleum Activities Program.	Yes <b>C 6.10</b>
<b>Good Practice</b>				
The use of trained vessel crew as MFOs on B-Type vessels PV and OCV to observe and record cetacean presence / activity as required.	F: Yes. Vessel bridge crews already maintain a constant watch during operations so can be trained in, and carry out, cetacean observations. CS: Additional cost of training	Trained MFOs on vessel bridge can increase understanding of PBW presence in the area Operational Area, with information assisting in decision making relating to cumulative noise reduction measures.	Benefits outweigh cost/sacrifice.	Yes <b>C 6.2</b>

<sup>28</sup> For safety reasons, the distance requirements are not applied to vessel(s) holding station or with limited manoeuvrability e.g. anchor handling, loading, back-loading, bunkering, close standby cover for overside working and emergency situations.

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
Implement adaptive management procedures so that only one B-type vessel on DP (including for refuelling) at any one time within 25 km of PV and pipelay activities. i.e. second B-type may be within the 25 km zone so long as it's not on DP.	F: Yes. CS: Potential for pipe delivery delays and inability to continue welding / laying pipeline, time and monetary costs in MFO training for vessel crew	A risk-based approach to management actions can be applied so greatest risk reduction is implemented during migration season/BIA and then controls cascade commensurate with the level of risk (i.e. peak north-bound migration, distribution area etc.)	Benefits outweigh cost/sacrifice.	Yes <b>C 6.5</b>
During contingent pipe transfer (while two B-types on DP alongside the PV instead of the usual one) - restrict second B-type from entering within 25km radius of the PV, even while B-type is not on DP, to account for MFO observation zone being less than distance to cetacean behavioural threshold SPL.	F: Yes CS: Delay in pipe unloading and reduction in vessel efficiency, increased vessel transit time and fuel use.	Restrictions on the presence of a second B-type whilst in transit (when it is not on DP) in proximity to the PV has limited benefits.  Noise modelling carried out shows there is only a marginal increase in cumulative impact of a second B-type on DP alongside the PV. This impact is even less for B-types in transit (as modelling assumed DP thruster power usage greater than non-DP engine usage).  Cetacean presence in the migration BIA and surrounding distribution zone is expected to be transitory, with feeding being opportunistic.	Control not commensurate with the level of risk.	No
Critical equipment onboard OCV, RIV and TSHD subject to periodic maintenance to ensure optimal performance	F: Yes. Preventative maintenance is a usual activity carried out to maintain vessel systems and equipment. CS: Time and financial cost of maintenance	Ensuring appropriate on-board maintenance occurs for critical equipment (i.e., thrusters) can reduce vibration and in water noise profile of a vessel	Benefits outweigh cost/sacrifice	Yes <b>C 6.6</b>
Carry out surveys (aerial / vessel based) around PV to confirm distribution and abundance of PBW, while the PV is operating in the PBW migration BIA during migration period (Apr-Jul & Oct-Jan)	F: Yes. It is possible to carry out aerial/vessel surveys around the PV CS: Financial costs associated with plane/pilot and vessels MFO hire as well as logistics of flight planning. Distance off shore would restrict duration	Surveys may increase understanding of PBW activity around the PV but no reduction in likelihood of PBW contact with underwater noise above impact levels that cannot already be achieved by other observation methods.	Cost/sacrifice outweighs benefit	No

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
	/ efficacy of such surveys.			
Manage vessel speed in the humpback and PBW whale BIAs in migratory seasons within the Operational Area (excluding Pilbara Port)	F: Yes. It is possible to carry out for vessels transiting within the Operational Area CS: Slower vessel speeds reduces fuel use but will impact slightly with longer transit times for vessels.	There is mounting evidence that reduction of vessel speeds can reduce vessel underwater noise emissions. The Pilbara Port boundaries have been excluded As the Pilbara Port Authority sets speed limits for within the Port boundaries	Benefits outweigh cost/sacrifice	Yes <b>C 6.7</b>
<b>Professional Judgement – Eliminate</b>				
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
Implement seasonal avoidance for pipelay activities within pygmy blue whale or humpback whale BIAs during migratory periods	F: No. CS: Activity timing driven by vessel availability, completion of seabed preparation activities and project scheduling to achieve required milestones and limit SIMOPS/ concurrent installation campaigns in-field	Avoidance of BIAs during migratory seasons can reduce cetacean exposure and impact potential.	Cost/sacrifice outweighs benefit	No
Schedule well sequence to ensure that drilling and xmas tree installation at Well 5 does not coincide with pipelay in adjacent waters, or PLET foundation installation	F: Yes. CS: Cost and schedule impacts due to delays in securing MODU and support vessels for specific timeframes	Concurrent drilling of Well 5, pipelay and PLET foundation installation would result in marginal increase in distance to behavioural response threshold for pygmy blue whales. Well 5 and PLET location are at least 50 km from the western boundary of the pygmy blue whale migration BIA but within the distribution range, where there is a lower likelihood of encountering either	Cost/sacrifice outweighs benefit	No

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Demonstration of ALARP				
Control Considered	Control Feasibility (F) and Cost/Sacrifice (CS)	Benefit in Impact/Risk Reduction	Proportionality	Control Adopted
		migrating or foraging pygmy blue whales even during peak periods of the migration seasons.		
Implement adaptive management within the PBW migration BIA, including cessation of operations / relocation of PV when PBWs are sighted.	F: No. Cessation of operations <sup>29</sup> , takes approx. 6 hours to weld abandonment and recovery (A&R) head onto Trunkline, attach A&R winch and lower to seabed – the length of this process makes it not feasible for the implementation of adaptive management. The process also introduces other risks (such as health and safety) which supports a focus on minimising A&R activities. CS: Not considered – control not feasible	Not considered – control not feasible	Not considered – control not feasible	No
<b>Professional Judgement – Substitute</b>				
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. The Petroleum Activities Program is due to be undertaken over 12 months with activities completed sequentially; a variation in timing to avoid migration periods would result	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 minimal environmental benefit. The cost/sacrifice outweigh the benefit gained.	No

<sup>29</sup> Noting that abandonment and recovery may occur in emergency situations such as weather beyond operational limits, or there are issues with pipe supply or mechanical requirements.

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
	in significant delays to the project. Ideal (calm) sea states for Trunkline installation occur over the summer months and sea states during winter months may introduce additional health and safety risks if laying pipe in marginal weather windows.			
Variation of the timing of the vessel activities to avoid peak turtle interesting periods	<p>F: Yes. It is possible to avoid peak interesting periods, however the risk of potential impacts from acoustic emissions is considered to be low given the location and water depth of the Operational Area.</p> <p>CS: Significant cost and schedule impacts due to delays in securing vessels for specific timeframes. The Petroleum Activities Program is due to be undertaken over 12 months with activities completed sequentially. Ideal (calm) sea states for Trunkline installation occur over the summer months.</p>	Impacts to interesting turtles resulting from acoustic emissions are expected to be low, therefore no reduction in consequence by adopting this control.	Grossly disproportionate. Implementation of the control requires considerable cost sacrifice for minimal environmental benefit.  The cost/sacrifice outweigh the benefit gained.	No
<b>Professional Judgement – Engineered Solution</b>				
Carry out maintenance and inspection regime on the PV thrusters prior to mobilisation to Operational Area, to ensure optimal performance.	<p>F: Yes. Ability to inspect and maintain thrusters and DP operating systems for PV.</p> <p>CS: Time and monetary cost of inspections and repair activity if required</p>	Ensuring thrusters and DP operating systems are maintained and running at optimal levels reduces vibration and other superfluous noise sources.	Benefits outweigh cost/sacrifice.	Yes <b>C 6.9</b>
Use night-time thermal imagery or vessel system prior to vessel transfers at night, to monitor for cetacean activity while the PV is operating in the PBW migration BIA during migration period (Apr-Jul & Oct-Jan).	<p>F: Not Feasible.</p> <p>CS: Cost of technology</p>	Being able to identify cetacean presence at night (whilst not species specific) can reduce the likelihood that the whales encounter cumulative underwater noise that is above impact thresholds.	Not Feasible.	No

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
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 collected and interpreted (not real time monitoring)	Limited benefit as the technology relies on Pygmy Blue Whale vocalisation, which is currently not well understood, particularly during foraging activities. Technology and applications still under development and not widely tested in field. Application limited due to lack of real time capability.	Cost/sacrifice outweighs benefit.	No
<p><b>ALARP Statement:</b></p> <p>As identified in the DAWE (now DCCEEW) and NOPSEMA guidance on key terms within the CMP, where it can be reasonably predicted that blue whale foraging is probable, known or whale presence is detected, adaptive management (C6.5, C6.8 and C6.9) should be used during industry activities to prevent unacceptable impacts (i.e., no injury or biologically significant behavioural disturbance) to blue whales from underwater anthropogenic noise.</p> <p>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 noise emissions 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.</p>				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
<p>The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5):</p> <ul style="list-style-type: none"> <li>• Overall impact significance levels for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>• EPOs and controls in the Scarborough OPP that are relevant to routine acoustic emissions have been adopted.</li> <li>• Additional guidance on key terms within the Conservation Management Plan for the Blue Whale (the CMP) was issued in September 2021 and these were considered in the risk assessment and assessment against relevant actions in the CMP. The Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan (refer Section 6.9).</li> <li>• The activity is not inconsistent with any other requirements of the EPBC Act (refer Section 6.9).</li> <li>• There are no changes to internal/external context specific to this risk from the Scarborough OPP. Impacts from noise was raised during stakeholder consultation (Appendix F, Table 1) and these were considered in the finalisation of the EP.</li> </ul>
<p><b>Acceptability Statement:</b></p> <p>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. Relevant EPBC Act requirements (principles of ESD; MNES significant impact guidelines; recovery plans, conservation advice and marine park management plans) have been considered during the impact assessment. The Petroleum Activities Program is not considered to be inconsistent with any relevant EPBC Act requirements, including the objectives, overall recovery objectives and actions of relevant recovery plans, conservation advice and management plans (Section 6.9.2).</p> <p>The impact assessment has determined that the generation of noise from project vessels and positioning equipment will not result in an 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</p>

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whale presence is detected, adaptive management should be used during industry activities to prevent unacceptable impacts. The impact assessment determined it is considered highly unlikely that individual PBW that may pass through the Operational Area during the Petroleum Activities Program would experience PTS or TTS, given individuals would need to remain within 0.01 km (PTS) and 0.03 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). In addition, with the adoption of adaptive management controls (C 6.5) the activity will be managed to reduce anthropogenic noise on pygmy blue whales and is therefore not inconsistent with The Conservation Management Plan for the Blue Whale (Section 6.9).

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 impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of acoustic emissions to a level that is broadly acceptable.

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 6</b> 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.</p> <p><b>EPO 11</b> 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.</p> <p><b>EPO 15</b> Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fish, marine mammals, marine reptiles, or the spatial distribution of a population.</p> <p><b>EPO 29</b></p>	<p><b>C 6.1</b> EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures<sup>30</sup>:</p> <ul style="list-style-type: none"> <li>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.</li> <li>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).</li> <li>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.</li> </ul>	<p><b>PS 6.1.1</b> Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) Interacting with cetaceans to minimise potential for vessel strike.</p>	<p><b>MC 6.1.1</b> Records demonstrate no breaches with EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans.</p>
		<p><b>PS 6.1.2</b> 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).</p>	<p><b>MC 6.1.2</b> Records demonstrate reporting cetacean ship strike incidents to the National Ship Strike Database.</p>
	<p><b>C 6.2</b> The use of trained vessel crew<sup>31</sup> as MFOs on B-Type vessels, PV and OCV to observe and record cetacean presence / activity as required.</p>	<p><b>PS 6.2</b> Trained vessel crew<sup>28</sup> onboard B-Type vessels, PV and OCV observe and record cetacean presence/activity while in the Operational Area</p>	<p><b>MC 6.2.1</b> Records of sightings and locations of marine fauna</p>

<sup>30</sup> For safety reasons, the distance requirements are not applied to vessel(s) holding station or with limited manoeuvrability e.g. anchor handling, loading, back-loading, bunkering, close standby cover for overside working and emergency situations.

<sup>31</sup> A suitably trained person who can make observations of fauna as part of their usual vessel activities (i.e. captain, first officer, bridge crew)

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
Undertake the Petroleum Activities Program in a that prevents injury to blue whales or biologically significant behavioural disturbance	<p><b>C 6.5</b> Implement adaptive management procedures so that only one B-type vessel on DP (including for refuelling) at any one time within 25 km of PV and pipelay activities. i.e. second B-type may be within the 25 km zone so long as it's not on DP</p>	<p><b>PS 6.5.1</b> While operating in the PBW migration BIA during migration seasons (Apr-Jul &amp; Oct-Jan;  or in the distribution area (west of BIA and 20km east) during peak northbound migration (May, June);  or in the humpback whale migration BIA during peak migration periods (June, July &amp; Sept);  Limit the number of B-type pipe transport vessels on DP within 25km of the PV (Control 6.5)</p> <p><b>PS 6.5.2</b> While operating either:</p> <ul style="list-style-type: none"> <li>• In the PBW distribution area (west of the migration BIA or 20km east) during PBW migration seasons;</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• West of KP 180 in Feb, Mar, Aug or Sept (outside PBW migratory seasons);</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• In the humpback whale migration BIA in May, Aug &amp; Oct:</li> <li>• Apply Control 6.5 if PBW(s) or humpback whales (certain or possible) are sighted by PV MFO<sup>32</sup> during an observation period<sup>33</sup> 60mins prior to second B-type arrival alongside the PV.</li> <li>• Once triggered, Control 6.5 no longer applies if no PBW(s) or humpback whales (certain or possible) have been sighted</li> </ul>	<p><b>MC 6.5.1</b> Records show <b>C 6.5</b> implemented as required by temporal / spatial triggers</p>

<sup>32</sup> 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.

<sup>33</sup> A period of time during which the dedicated MFO actively and exclusively looks for cetaceans

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
		<p>during a subsequent 60mins observation period<sup>33</sup>.</p> <ul style="list-style-type: none"> <li>• Second B-type can only come alongside during night-time if there have been no PBW or humpback whales (certain or possible) sighted (as per C6.2) in the preceding day-light period.</li> </ul>	
	<p><b>C 6.6</b> Critical equipment onboard OCV, RIV and TSHD subject to periodic maintenance to ensure optimal performance</p>	<p><b>PS 6.6.1</b> Critical equipment maintained as per maintenance systems requirements</p>	<p><b>MC 6.6.1</b> Maintenance systems records of critical equipment</p>
	<p><b>C 6.7</b> Manage vessel speed in the humpback and PBW whale BIAs in migration seasons within the Operational Area (excluding Pilbara Port).</p>	<p><b>PS 6.7.1</b> Vessel speeds in the Operational Area (excluding Pilbara Port) are restricted ≤10kn:</p> <ul style="list-style-type: none"> <li>• When in the pygmy blue whale migration BIA during PBW migration periods (Apr-Jul &amp; Oct-Jan inclusive)</li> <li>• When in the humpback whale migration BIA during migration periods (May – Aug and Aug - Oct inclusive).</li> </ul>	<p><b>MC 6.7.1</b> Records demonstrate vessel speeds, in the Operational Area, transiting in whale BIAs in migratory seasons, were ≤ 10 knots.</p>
	<p><b>C 6.9</b> Carry out maintenance and inspection regime on PV thrusters prior to mobilisation to Operational Area, to ensure optimal performance</p>	<p><b>PS 6.9</b> Maintenance and inspection of PV thrusters undertaken prior to mobilisation to Operational Area.</p>	<p><b>MC 6.9.1</b> Records demonstrate the PV has a maintenance program in place for the thrusters</p>
			<p><b>MC 6.9.2</b> Records demonstrate the PV thrusters were inspected prior to mobilisation to the Operational Area.</p>
	<p><b>C 6.10</b> Vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to</p>	<p><b>PS 6.10</b> When within 250 m of a whale shark vessels will not travel greater than 6 knots and vessels will not approach closer than 30 m to a whale shark</p>	<p><b>MC 6.10.1</b> Records demonstrate no breaches of speed requirements when within 250 m of a whale shark</p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	approach closer than 30 m of a whale shark <sup>34</sup> .		

<sup>34</sup> For safety reasons, the distance requirements are not applied to vessel(s) holding station or with limited manoeuvrability e.g. anchor handling, loading, back-loading, bunkering, close standby cover for overside working and emergency situations.

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### 6.7.7 Routine and Non-Routine Discharges – Vessels and Seabed Intervention

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.1.7 – 7.1.10 – Routine and Non-Routine Discharges														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7			<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Habitats and Biological Communities – Section 4.5					<b>Stakeholder Consultation</b> 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 PJ	Broadly Acceptable	EPO 3
Routine discharge of food waste to the marine environment			✓					A	F	-	-			
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 / grout from seabed intervention activities		✓	✓			✓		A	E	-	-			
Description of Source of Impact/Risk														
Accommodation is provided for up to 702 people maximum (usually 550) onboard the PV (Castorone), approx. 90-200 people onboard construction vessels, approx. 220 (maximum 278) people onboard the SWLB and around 20 people onboard support vessels. Project vessels routinely generate/discharge:														
<ul style="list-style-type: none"> <li> <b>Sewage and Greywater:</b> 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<sup>3</sup> per vessel per day). Using a rate of 0.375 m<sup>3</sup>/person/day as a guide (NERA, 2017), it is expected that vessel discharges will range from ~ 262 m<sup>3</sup>/day from the largest vessel (~700 people onboard) to ~ 9.5 m<sup>3</sup>/day from a support vessel.                     </li> <li> <b>Food waste:</b> 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.                     </li> <li> <b>Deck and Bilge Water:</b> 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                     </li> </ul>														

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deck activities such as cleaning/wash-down of equipment/decks. Lubricants may be used in equipment such as the grab dredger and TSHD drag head.

- **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<sup>3</sup>/d.
- **Cement and Grout:** During span rectification works, cement discharges may occur from overflow while filling/filtering of cement through cement bags for span rectification; line washout (down line cleaning); or cement unit washout from onboard the vessel.

Project vessels are predominantly transient through the Operational Area whilst discharging, with the greatest risk associated with the PV given the 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<sup>3</sup> 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 turbidity in the water column. Reduction in water quality will be temporary (limited to the cement operational discharges) and due to small volumes are likely to be subject to rapid dispersion and dilution by 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. Project vessels with the greatest volumes of discharge and slow transit speed are expected to be operational for a short duration (<6 months). 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 Operational Area.

#### Sediment Quality

Impacts associated with routine and non-routine deck and bilge water discharges will be limited to the area surrounding the discharge source of the vessel. Due to the dispersive nature of the discharges within the highly mixed offshore marine environment, any toxins associated with transient surface discharges are not expected to reach marine sediments at concentrations that will result in notable changes to sediment quality.

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Increased salinity and other toxins from chemical additives in brine and cooling water discharges could potentially accumulate in benthic sediments, causing changes to sediment quality. However, the transient nature of project vessels and the water depth of the Operational Area (approximately 31 m at the State waters boundary to 1400 m near the FPU), indicate discharges of cooling water and brine are expected to disperse before reaching the seabed and no change in sediment is expected.

Cement discharges at the seabed are expected to be minimal and once the cement has hardened, chemical additives are locked into the cement (Terrens et al., 1998) and 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 a highly localised physical footprint and is not expected to affect the overall diversity or ecosystem function of the benthic communities of 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 this area and is only considered a localised impact.

### **Marine Fauna**

A change in water quality from the discharge of sewage and greywater could result in injury or mortality to marine fauna. This could be the result of oxygen depletion in the waters due to nutrient enrichment, or due to toxins and chemicals present in the discharged wastes. Open marine waters are typically influenced by regional wind and large-scale current patterns resulting in the rapid mixing of surface and near surface waters where sewage discharges may occur. This means nutrients from the discharge of sewage will not accumulate or lead to eutrophication due to the highly dispersive environment. Therefore, the receptors with the greatest potential to be impacted are those in the immediate vicinity of the discharge (NERA, 2017). Given that sewage discharges from vessels are at or near the surface, and remain buoyant, the receptors with the potential to be impacted are also those within or on surface waters; i.e. plankton, fish and other marine fauna.

Discharge of food waste into the marine environment has the potential to attract some opportunistic marine fauna including fish and seabirds to the area in response to the increased food availability or, indirectly because of attraction of prey species. However, given the small quantities of food waste to be disposed, any attraction is likely to be minor, temporary and localised.

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 deck drainage and treated bilge water discharge. The discharges, which may include non-organic contaminants, will rapidly dilute. Such discharges are expected to be intermittent and in very small quantities and concentrations as to not pose any significant risk to any relevant receptors.

As discharges will be sporadic (i.e. no continuous flow), there is no potential for fluids to accumulate in the water column.

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, as they traverse the Operational Area, Section 4.5.1). Increased salinity and other toxins from chemical additives in brine and cooling water discharges could potentially harm marine fauna. Due to the relatively inert properties and low concentrations of scale inhibitors and biocides within the brine and cooling water discharge, the high level of dilution and mixing within the receiving offshore environment and the limited area of impact, impacts (if any) to pelagic species are expected to be highly localised. While the likely presence of marine fauna varies at different times of the year depending on migration, foraging and breeding patterns in the region, the potential for impact remains low due to the localised nature of discharges and rapid dilution.

### **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 Operational Area. Impacts to plankton from grey water, sewerage or brine and cooling water discharges is not expected.

### **Aesthetic Values**

The composition of sewage and greywater may include physical particulate matter such as solids composed of floating, settle able, colloidal and dissolved matter. These substances can affect aspects of aesthetics such as ambient water colour, the presence of surface slicks/sheens and odour. However, as vessels will be moving during the discharge of sewage and greywater, this will promote mixing and dilution of the waste.

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Given the distance of the project offshore, the proximity of water quality changes to the discharge source, the rapid consumption of matter by planktonic species and bacteria, and the spatial nature of tourism and recreation activities and coastal settlements (i.e. on or near the shoreline); impacts to receptors associated with changes in aesthetic values are not expected to occur.

**AMPs**

The Operational Area overlaps the Montebello Marine Park, and the Dampier Marine Park is less than 1 km from the Borrow Ground Project Area. The North-west Marine Parks Network Management Plan (DNP, 2018a) lists the natural values of the Montebello and Dampier AMPs as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act and cultural values which are intrinsically linked to those natural values. For activities occurring within the Montebello Marine Park, and adjacent to the Dampier Marine Park, the short-term and localised impacts of routine and non-routine discharges in open waters will not be inconsistent with the natural and cultural values and objective of the Multiple Use Zone (VI) to provide for ecologically sustainable use and the conservation of ecosystems, habitats and native species, or for the Habitat Protection Zone (IV) to provide for the conservation of ecosystems, habitats and native species in as natural a state as possible, while allowing activities that do not harm or cause destruction to seafloor habitats. Impacts are therefore not inconsistent with the objectives of the North-west Marine Parks Network Management Plan or the zoning of the Montebello and Dampier AMPs (DNP, 2018a).

**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)	No Lasting Effect	Negligible (F)
Sediment quality	Change in sediment quality	Low value	No Lasting Effect	Negligible (F)
Migratory Shorebirds and Seabirds	Injury/mortality 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)
AMPs		High value	No lasting effect	Slight (E)

**Overall Impact Significance Level/ Risk Consequence:** 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 and AMPs 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
<b>Legislation, Codes and Standards</b>				
Marine Order 95 – Pollution prevention – garbage (as appropriate to vessel class) which requires putrescible waste and food scraps are passed through a macerator	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes <b>C 7.1</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
so that it is capable of passing through a screen with no opening wider than 25 mm.				
<p>Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class) which include the following requirements:</p> <ul style="list-style-type: none"> <li>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</li> <li>a sewage comminuting and disinfecting system approved by an issuing body, that complies with Regulation 9 of Annex IV; or</li> <li>a holding tank approved by an issuing body, that complies with Regulation 9 of Annex IV</li> </ul>	<p>F: Yes. CS: Minimal cost. Standard practice.</p>	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	<p>Yes <b>C 7.2</b></p>
<p>Marine Order 91 – Oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge:</p> <ul style="list-style-type: none"> <li>Oil Record Book Valid International Oil Pollution Prevention (IOPP) Certificate.</li> <li>Vessel specific SOPEP.</li> </ul>	<p>F: Yes. CS: Minimal cost. Standard practice.</p>	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	<p>Yes <b>C 7.3</b></p>
Compliance with relevant vessel discharge requirements as per the Port of Dampier Handbook when operating in the Port of Dampier	<p>F: Yes C: Minimal cost. Standard practice.</p>	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	<p>Yes <b>C 7.6</b></p>
<b>Good Practice</b>				
Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints as described in Section 7.2.1.	<p>F: Yes. CS: Minimal cost. Standard practice.</p>	Environmental assessment of chemicals in discharges will reduce the consequence of impacts resulting from discharges to the	Benefits outweigh cost/sacrifice.	<p>Yes <b>C 7.4</b></p>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
		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.		
<b>Professional Judgement - Eliminate</b>				
Vessel related discharges, excluding the PV, will be carried out outside of the Montebello Marine Park unless vessel safety is compromised.	F: Yes. CS: May require additional cost and fuel if vessels need to transit outside of the Montebello Marine Park.	Reduces potential changes to water quality within the Marine Park.	Benefits outweigh cost/sacrifice.	Yes <b>C 7.5</b>
<b>Professional Judgement – Substitute</b>				
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
<b>Professional Judgement – Engineered Solutions</b>				
No additional controls identified.				
<b>ALARP Statement:</b> 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 are considered ALARP.				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5): <ul style="list-style-type: none"> <li>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</li> </ul>

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. A number of BIAs for EPBC Act listed Threatened or Migratory species overlap the Operational Area (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. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of these discharges to a level that is broadly acceptable.

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<b>EPO 3</b> 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.	<b>C 7.1</b> 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.	<b>PS 7.1</b> Vessels compliant with Marine Order 95 – Pollution prevention – garbage.	<b>MC 7.1.1</b> Records demonstrate vessels are compliant with Marine Order 95 – Pollution prevention (as appropriate to vessel class).
	<b>C 7.2</b> Marine Order 96 - pollution prevention – sewage (as appropriate to vessel class) which include the following requirements: <ul style="list-style-type: none"> <li>• 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</li> <li>• a sewage comminuting and disinfecting system approved by an issuing body, that complies with Regulation 9 of Annex IV; or</li> </ul> A holding tank approved by an issuing body, that complies	<b>PS 7.2</b> Vessels compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).	<b>MC 7.2.1</b> Records demonstrate vessels are compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	with Regulation 9 of Annex IV		
	<p><b>C 7.3</b> Marine Order 91 – oil (as relevant to vessel class) requirements, which includes mandatory measures for the processing of oily water prior to discharge:</p> <ul style="list-style-type: none"> <li>Oil Record Book Valid International Oil Pollution Prevention (IOPP) Certificate.</li> <li>Vessel specific SOPEP.</li> </ul>	<p><b>PS 7.3</b> Discharge of machinery space bilge/oily water will meet oil content standard of &lt;15 ppm without dilution.</p>	<p><b>MC 7.3.1</b> Records demonstrate discharge specification met for vessels.</p>
	<p><b>C 7.4</b> 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</p>	<p><b>PS 7.4</b> Chemicals intended or likely to be discharged into the marine environment will be approved through the Woodside chemical assessment process.</p>	<p><b>MC 7.4.1</b> Records demonstrate chemical selection, assessment and approval process for selected chemicals is followed.</p>
	<p><b>C 7.5</b> Vessel related discharges, excluding the PV, will be carried out outside of the Montebello Marine Park, unless vessel safety is compromised.</p>	<p><b>PS 7.5</b> Project vessels (excluding PV) operating in the Montebello Marine Park should avoid making vessel discharges of sewage, grey water and food waste, until outside of the Montebello Marine Park</p>	<p><b>MC 7.5.1</b> Records demonstrate vessel related discharges are carried out outside of the Montebello Multiple Use Zone</p>
	<p><b>C 7.6</b> Compliance with relevant vessel discharge requirements as per the Port of Dampier Handbook when operating in the Port of Dampier</p>	<p><b>PS 7.6</b> Vessels compliant with the relevant vessel discharge requirements set out in the Port of Dampier Handbook, when operating in Dampier Port waters.</p>	<p><b>MC 7.6.1</b> Inspection records demonstrate compliance with Port of Dampier handbook vessel discharge requirements</p>

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### 6.7.8 Routine and Non-Routine Discharges – Trunkline Installation and Pre-commissioning

Scarborough OPP – Relevant Impact Assessment Section														
Scarborough OPP Section 7.1.12 - Routine and Non-Routine Discharges: Subsea Installation and Commissioning														
<b>Context</b>														
<b>Relevant Activities</b> Trunkline Pre-commissioning – Section 3.11.5			<b>Existing Environment</b> Physical Environment – Section 4.4 Habitats and Biological Communities – Section 4.5				<b>Stakeholder consultation</b> Consultation – Section 5							
<b>Impact/Risk Evaluation Summary</b>														
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
Trunkline Pre-commissioning discharges (FCGT / hydrotest)		✓	✓		✓	✓		A	E	-	-	GP PJ	Broadly Acceptable	EPO 3, 6, 8, 9, 16, 17, 18
Contingent Trunkline discharges i.e. wet buckle		✓	✓		✓	✓		A	E	-	-			
Discharges associated with IMMR activities while Trunkline in preservation on seabed		✓	✓		✓	✓		A	F					
<b>Description of Source of Impact/Risk</b>														
<b>Pre-commissioning</b>														
<p>Pre-commissioning testing of the trunkline will be undertaken to test integrity, as outlined in Section 3.11.5, with dry pre-commissioning as the preferred option. FCGT or wet pre-commissioning may be carried out as a contingent activity, in the event that dry pre-commissioning fails to meet DNV requirements or Trunkline Safety Case approval(s) for the dry pre-commissioning process are not obtained. Wet pre-commissioning will result in discharges to the marine environment under the following scenario: FCGT of the full trunkline length, with discharge in Commonwealth waters at the PLET.</p> <p>If FCGT is used, the trunkline will be filled with treated seawater, hydrotested and dewatered, then dried and inerted. The activity will be conducted in several phases (shown in Table 6-18) with up to three distinct discharges at the PLET separated in time to allow ambient water conditions to return to below threshold levels. Pre-flooding is required for the full trunkline FCGT activity to control pig speed down the continental slope crossing. Following discharge of pre-flooding/cleaning water, there will be around seven days until the next discharge is made, while the Trunkline is pressurized with hydrotest squeeze water and the hydrotest is carried out. Once the hydrotest squeeze water is discharged the rest of the hydrotest water is discharged along with fluid from a desalination pig train, which consists of treated fresh water, to remove any salt build-up in the line. The final dewatering stage contains compressed air to dry the line.</p> <p>For all of the discharges, except the desalination water (which is treated fresh water), the fluids are likely to be treated filtered seawater. The treatment will be a hydrotest chemical, of up to 550 ppm, which typically consists of a biocide, oxygen scavenger and corrosion inhibitor (See Table 6-19).</p> <p><b>Wet Buckle (unplanned contingency)</b></p> <p>During trunkline installation, contingency dewatering may be required to remove untreated seawater from the flowline in a wet buckle event. In the event of a wet buckle the line breaks and trunkline is flooded with seawater. The raw</p>														
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seawater ingress will be pushed out of the trunkline with treated water, which is used to prevent corrosion and maintain the integrity of the trunkline. Seawater will be treated with the same chemicals as for the contingent FCGT process. The Trunkline would be dewatered from shore to offshore. The discharge could occur at any point along the Trunkline, with the location dependent on where the Trunkline was cut to remove the buckled section. Discharge volume and chemical concentrations are dependent on the dewatering option selected. These include:

- Pre-flooding of the trunkline with treated seawater: this involves first flooding the length of the trunkline with treated seawater, at 350 ppm. Therefore, the discharge volume will vary dependent on the location of the wet buckle. The discharge volume will increase the further along the Trunkline a wet buckle occurs, due to the greater volume of flushing required to reduce salt contamination in the Trunkline. A wet buckle around KP 32 for example could result in a discharge of chemically treated seawater around 19,080 m<sup>3</sup> while a wet buckle around KP432 (i.e. at the end of the trunkline) could result in a discharge of treated seawater approximately 243,256 m<sup>3</sup>. A wet buckle along the Trunkline route between these two points would have a discharge in between these volumes i.e. KP 190 would result in a discharge around ~210,000 m<sup>3</sup>.
- Pre-flooding the trunkline with untreated seawater followed by treated freshwater slugs: this involves using a pig train separated by chemically treated fresh water (desalination) slugs to dewater the trunkline. The volumes of treated water would be up to approximately 1200 m<sup>3</sup> of freshwater treated with chemicals up to 700 ppm.

**Table 6-18: Estimated contingent Trunkline discharges**

	Full Trunkline	Example wet buckle
<b>Discharge location</b>	<i>Commonwealth waters</i>	<i>Commonwealth waters</i>
	<i>Pipeline End Termination Assembly (Approx. KP 433)</i>	<i>Approx KP33</i>
Ave Water depth (m MSL)	941	39.3
Discharge depth (m MSL)	938	39
<b>Disposal of pre-flooding water and cleaning water (treated and filtered seawater)</b>		
Discharge volume (m <sup>3</sup> )	254,300	N/A
Discharge duration	~ 11 days	
<b>Disposal of cleaning water only (treated and filtered seawater)</b>		
Discharge volume (m <sup>3</sup> )	NA	N/A
Discharge duration		
<b>Approx time between discharges to the environment</b>	7 days	
<b>Disposal of hydrotest squeezed water (treated and filtered seawater)</b>		
Discharge volume (m <sup>3</sup> )	3,500	N/A
Discharge duration	~17 hours	
<b>Approx time between discharges to the environment</b>	3 days	
<b>Disposal of hydrotest water and desalination water (treated and filtered seawater / freshwater)</b>		
Discharge volume (m <sup>3</sup> )	243,256	19,080
Discharge duration	~22.5 days	~1.39 days

**Discharges associated with IMR activities while Trunkline in preservation on seabed**

If the trunkline is damaged while in preservation on the seabed following installation (and before the introduction of hydrocarbons), the trunkline may be exposed to raw seawater and/or repair may be required. In this case, integrity of the Trunkline may need to be confirmed through traditional flood, cleaning, gauging and testing (FCGT). If FCGT is used for this purpose, discharges of treated seawater may occur at the location of the Trunkline resection and/or the Pipeline End Termination (PLET, ~KP433). Discharge volume is dependent on the length of Trunkline required to be repaired and as such is comparable to a wet buckle repair.

**Water treatment chemicals**

Chemicals used to treat seawater and / or freshwater are required for contingent FCGT or wet buckle to ensure the integrity of the Trunkline is not compromised by internal corrosion development. These chemicals are typically comprised of oxygen scavenger, biocide and corrosion inhibitor. Chemicals which may be used are provided Table 6-19. These chemicals are all Hazard Quotient Colour Band 'Gold' (or OCNS Grouping E) with no substitution or product warnings (PS 8.1). Should chemical selection change from those currently planned due to availability or Trunkline material compatibility issues, selected chemicals will meet the required performance standard (PS 8.10) with regard to its OCNS rating.

**Table 6-19: Potential chemicals for water treatment**

Operation	Option 1	Option 2
Wet Buckle Contingency	RX-202 Oxy Scavenger RX-1236 Biocide	Hydro 3 cocktail
Flood Clean Gauge Test	RX-202 Oxy Scavenger RX-1236 Biocide RX-9026E Clear Dye	Hydro 4 cocktail

**Quantitative Risk Assessment**

In order to understand the potential impacts and risks associated with the discharge of hydrotest fluid, Woodside commissioned RPS to model the fate and transport of two representative discharge scenarios, one at the PLET and another in Commonwealth waters near the State waters boundary (RPS, 2021). To determine the fate, transport and dilution of the hydrotest discharge, both near-field and far-field modelling was undertaken as these are used to describe different processes and scales of effect. The modelled scenarios included:

- The full trunkline FCGT comprised of
  - Pre-flooding / cleaning water of 254,300 m<sup>3</sup>
  - Hydrotest / squeeze water of 245,511 m<sup>3</sup>
- Nearshore wet buckle
  - Cleaning water of 29,000 m<sup>3</sup>

Note, due to the significantly smaller volumes of treated water discharge (less than 1,200 m<sup>3</sup>) associated with the wet-buckle philosophy which utilises treated freshwater slugs, no specific modelling was undertaken and the model scenarios above are considered conservative analogues

Stochastic modelling was conducted for this study, which compiled data from 150 hypothetical releases under different environmental conditions and seasons to determine the largest extent of plume dispersion. A three-dimensional, spatially-varying current data set surrounding the discharge locations for a ten-year (2006-2015) hindcast period were used, with summer, winter and transitional seasons modelled. The data set included the combined influence of drift and tidal currents and was suitably long as to be indicative of interannual variability in ocean currents. The current data set was validated against metocean data collected in the Scarborough Project Area.

Results of the replicate simulations were then statistically analysed and mapped to define contours of predicted dilutions.

**Development of thresholds for impact assessment**

Due to the proposed chemical additives with the hydrotest fluid (i.e., biocides, corrosion inhibitors, oxygen scavenger, fluorescent 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. The outputs of the quantitative modelling are used to assess the environmental risk by delineating which areas of the marine environment could be exposed to chemicals exceeding toxicological threshold concentrations, and the expected time taken for concentrations to reduce to below thresholds.

The 99% species protection level concentration is suggested by the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018) for the development of environmental criteria for high conservation ecosystems or chemicals that have a tendency to bioaccumulate. Due to the lack of availability of whole effluent toxicity data for the chemicals in Table 6-20, species protection level concentrations can not be derived. Therefore, the 99% species protection value derived Hydrosure 0-37670R was used as an analogue to interrogate the outputs of the model for the purpose of the impact assessment. Noting that Hydrosure 0-3670R will not be used as it does not meet the required performance standard, with regard to its OCNS rating (PS 8.1).

Chevron Australia Pty Ltd (2015) conducted whole effluent toxicity (WET) testing on Hydrosure 0-3670R (Champion Chemicals Pty Ltd), diluted in seawater. WET testing was undertaken on five locally relevant species, for the NWMR, from four different taxonomic groups based on ANZECC & ARMCANZ (2000). Since Hydrosure 0-3670R is a mixture containing both the biocide and oxygen scavenger for chemical treatment, only one assay in each test species was

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necessary to evaluate the toxicity of the product. The results of the WET testing are described in Table 6-20. As expected, simpler life forms (e.g. algae and larvae) had a higher sensitivity to the chemical compared to be more complex life forms such as fish. From these results Chevron (2015) developed species sensitivity distribution curves to determine species protection concentrations (Table 6-21).

**Table 6-20: Ecotoxicological test results for Hydrosure 0-3670R**

Species	Duration (hrs)	NOEC (mg/L)
<i>Nitzschia closterium</i> (Algae)	72	1.30
<i>Saccostrea echinata</i> (Mollusc)	48	0.250
<i>Heliocidaris tuberculata</i> (Echinoderm)	72	1.25
<i>Melita plumulosa</i> (Crustacean)#	96	0.13
<i>Lates calcifer</i> (Fish)#	96	12.5

#toxicity test is defined as an acute test

**Table 6-21: Species protection concentrations for Hydrosure 0-3670R**

	PC 99% (mg/L)	PC 95% (mg/L)	PC 90% (mg/L)
Hydrosure (based on NOEC)	0.06	0.10	0.15

The results from this study established a 99% species protection value of 0.06 mg/L, which was applied in the modelling over a 48-hr rolling median (Chevron Australia Pty Ltd, 2015). The duration was a conservative approach to account for the fact that the hydrodynamics of the marine environment result in dilution of the chemical concentration after discharge therefore it is unlikely that concentrations would remain elevated for long durations. Therefore, the duration was based on the minimum test duration of 48 hours.

Based on the expected initial concentration of 350 mg/L for pre-flooding and cleaning water and wet buckle discharges, 5,833 dilutions are required. While for an initial concentration of 550 mg/L for hydrotesting, 9,167 dilutions are required to meet threshold concentration at the 99% species protection. Though this likely over represents the residual toxicity of the fluid following discharge as it was assumed that the residual discharge concentration of the chemicals within the fluid is the same as the initial dosing concentration with no degradation or decay during residence within the pipeline.

**FCGT – trunkline modelling results**

Nearfield modelling results for discharge at the offshore PLET location indicates that a turbulent mixing zone will be created at the seabed, for a horizontal distance of ~90 to 115 m, with a vertical distribution up to 40 m. Outside of this turbulent zone, a positively buoyant plume is expected to rise in the water column, which may reach a horizontal distance of up to ~425 m from the PLET prior to reaching trapping depth.

Farfield modelling for this discharge indicates that dilutions required to reach the threshold concentration (0.06 mg/L) at the 95th percentile (applied as a 48-hour rolling median) for the pre-flooding and cleaning water (additive concentration 350 mg/L) is achieved at a maximum distance of ~6,100 m from the PLET, however on average it is much less and was reached at 600 m (Table 6-22). Similarly, the maximum distance to achieve threshold concentration at 95th percentile (applied as a 48 hr rolling median) for the hydrotest discharges ranges from ~1,400 m (additive concentration 550 mg/L) to ~900 m (additive concentration 350 mg/l) from the PLET. Again, on average, the distances to achieve the threshold concentration were less and ranged from 500 to 600 m. The significantly greater spatial rate of dilution for hydrotest discharge when compared with pre-flood/cleaning is attributed to the lower rate of discharge. Noting that the discharge rate for the pre-flooding and cleaning water is 1000 m<sup>3</sup>/ hr whereas on average the discharge rate for the hydrotest discharge was ~430 m<sup>3</sup>/hr.

**Table 6-22: Average and maximum distances to achieve the threshold concentration at the 99% and 95% species protection**

Scenarios	99% Species Protection		95% Species Protection	
	Average distance	Maximum distance	Average distance	Maximum distance
	Dosage concentration 350 ppb (5833 dilutions)		Dosage concentration 350 ppb (3500 dilutions)	
Pre-flooding / cleaning water of 254,300 m <sup>3</sup> (at 1000 m <sup>3</sup> /hr)	600 m	6.1 km	500 m	4.2 km

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Hydrotest / squeeze water of 245,511 m <sup>3</sup> (at average of ~430 m <sup>3</sup> /hr)	500 m	900 m	300 m	500 m
	Dosage concentration 550 ppb (9167 dilutions)		Dosage concentration 550 ppb (5500 dilutions)	
Hydrotest / squeeze water of 245,511 m <sup>3</sup> (at average of ~430 m <sup>3</sup> /hr)	800 m	1.4 km	400 m	800 m

The maximum time for concentrations to fall below threshold concentration under weak current conditions (resulting in low mixing and low dilution) was 2.77 days. Therefore a minimum time period of 3 days will be applied between pre-flooding/cleaning and hydrotest discharges for the full trunkline FCGT.

**KP 33 - wet buckle discharge**

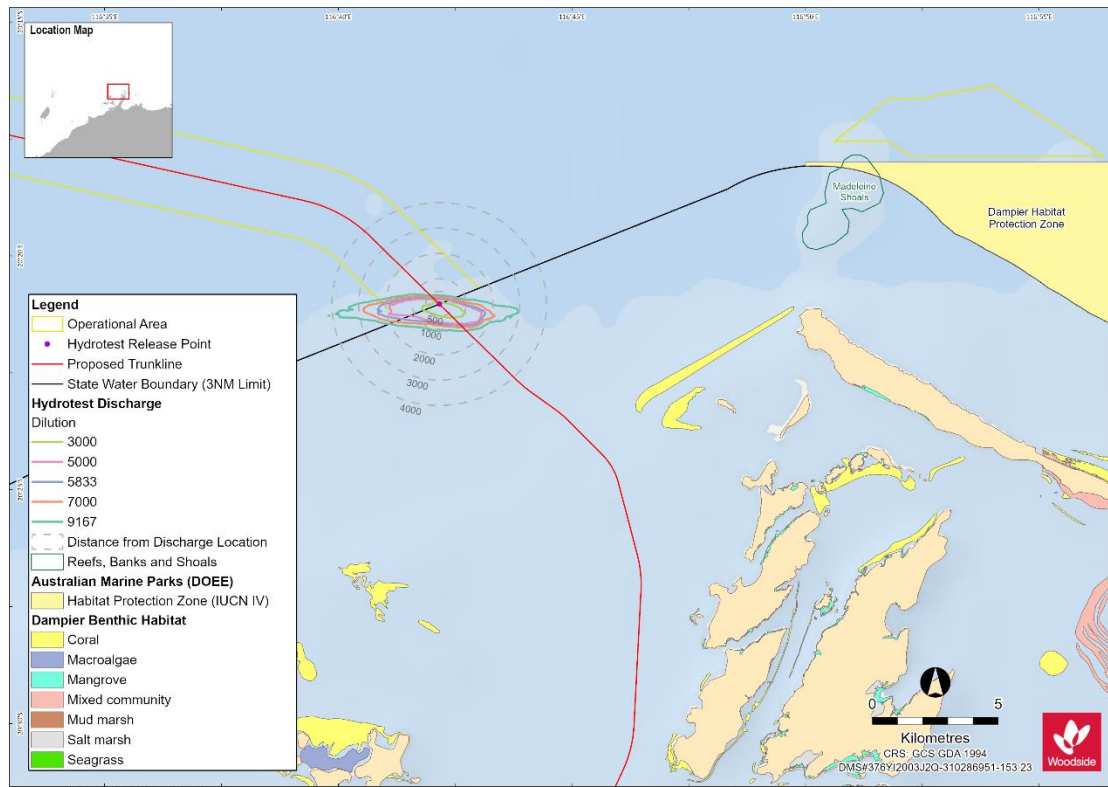
Nearfield modelling results for nearshore component discharge adjacent to the State waters boundary indicates that a turbulent mixing zone will be created at the seabed, for a horizontal distance of ~40 m, with vertical distribution around 10 m. Outside of this turbulent zone, a positively buoyant plume is expected to rise in the water column, which may reach a horizontal distance of up to ~60 m from the discharge location prior to reaching trapping depth.

Farfield modelling for this discharge indicates that dilutions required to reach the threshold concentration (0.06 mg/L) at the 95th percentile (applied as a 48-hour rolling median) for the pre-flooding and cleaning water (additive concentration 350 mg/L) is achieved at a maximum distance of ~2100 m from the release location however on average it is much less and was reached at 400 m. This was based on a discharge rate of 1000 m<sup>3</sup>/hr.

**Table 6-23: Average and maximum distances to achieve the threshold concentration at the 99% and 95% species protection**

Scenarios	99% Species Protection		95% Species Protection	
	Average distance	Maximum distance	Average distance	Maximum distance
	Dosage concentration 350 ppb (5833 dilutions)		Dosage concentration 350 ppb (3500 dilutions)	
Cleaning water of 29,000 m <sup>3</sup> (at 1000 m <sup>3</sup> /hr)	500 m	2.1 km	200 m	900 m

Dilution contours, representing 150 simulations, for this discharge in context of nearby receptors are shown in Figure 6-6.



**Figure 6-6: Expected dilution contours for a seabed discharge of 29,000 m<sup>3</sup> in Commonwealth waters adjacent to the State waters boundary**

## Detailed Impact Assessment

### Assessment of Potential Impacts

#### Water and Sediment Quality

Background water quality in the NWMR is influenced by large tidal regimes and strong oceanographic currents. Water quality in Trunkline Project Area is likely to be unpolluted tropical offshore environment, nutrient poor and reflects the offshore oceanic conditions of the wider Western Australian region, with the exception of existing disturbances in ports. Similarly, marine sediments are typical of the continental slope in the Northwest Transition bioregion, consisting of soft sandy clay/silt (Section 4.4.3).

Stochastic and deterministic modelling of the FCGT discharge scenarios indicates that chemical concentrations are expected to be below the 99% species protection level within 6,100 m (based on the minimum dilutions), of the PLET, with changes in water quality predicted to return below the threshold value within approximately three days of completing the discharges. A smaller distance may be expected from contingency wet buckle discharges to achieve the required dilutions, in the event of a wet buckle due to the lower discharge rate (~570 m<sup>3</sup>/hr). Depending on the location of a wet buckle along the trunkline route, chemical concentrations can be expected to drop below the 99% species protection level within a ~1-2 kilometres. This is based on the ~900 m and 2,100 m distances where chemical concentrations are expected to be below the 99% species protection level at the PLET (for hydrotest discharges) and at the state boundary release locations respectively.

The presence of chemical additives in discharged hydrotest fluids are expected 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 Project Area. The discharge is expected to remain close to the seabed which means the temporary change in water quality will be restricted to deep waters at the PLET location and predominantly near seabed at the release location near the State waters boundary. As such, the discharge is 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 plume is expected to remain close to the seabed, a temporary change in sediment quality may occur. However, as demonstrated by the modelling, due to rapid dispersion of the treated seawater, 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

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Impacts from routine and non-routine discharges of pre-commissioning or installation fluids will have a slight effect on water and sediment quality. There are no variations in seasonal sensitivity in relation to water and sediment quality that would influence the effect of the discharge. Receptor sensitivity is low (low value, open water), and therefore Impact Significant Level of routine and contingent discharges of pre-commissioning or installation fluids on water quality and sediment quality is negligible.

**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 the plume if present. These organisms however, have a high natural mortality and rapid replacement rate and are therefore likely to recover after activity ceases.

Stochastic and deterministic modelling of the FCGT discharge scenarios indicates that chemical additive concentrations are expected to be below the 99% species protection level within 6,100 m with changes in water quality predicted to return below the threshold value within approximately three days of completing the discharges. As described above, chemical concentrations resulting from a wet buckle discharge can be expected to drop below the 99% species protection level within a ~1-2 kilometres of the discharge location.

Treated seawater discharge in the unlikely event of full Trunkline FCGT or wet buckle discharge in deeper waters will occur close to the seafloor in water depths of about ~940 m at the PLET location. Given phytoplankton and zooplankton are generally limited to near-surface waters (i.e., the photic and meso-photoc zones) no lasting effect on plankton is expected.

Plankton populations may be affected by a wet buckle discharge along the trunkline route in the shallower waters of the continental Shelf within a limited area (~1-2 km) of the discharge location. However, given the expected rapid dispersion and dilution of the plume by prevailing currents and the temporary nature of the discharge, impacts to plankton are likely to only occur in the immediate area of the discharge plume, over a period of days to weeks. Given the fast population turnover of open water plankton populations (ITOPF, 2011), the potential impacts are expected to be localised and temporary.

Discharges during pipelay or pre-commissioning or installation activities will be restricted to a small area around the discharge point and will disperse rapidly in the environment. Impacts from contingent treated seawater discharges will have no lasting effect on plankton.

**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 dewatering discharges is expected to be similar to pelagic invertebrate species such as plankton.

Discharges during pre-commissioning will therefore be restricted to a relatively small area around the discharge point and will disperse rapidly in the environment. The extent of seabed exposure at levels where impacts could occur will be small, and potential impacts are expected to be localised, temporary and negligible. Impacts from contingent treated seawater discharges will have no lasting effect on epifauna and infauna. Receptor sensitivity of epifauna and infauna is considered low at the possible FCGT discharge location. The Impact Significance Level of an FCGT/hydrotest discharge on epifauna and infauna has therefore been identified as Negligible (F). There are no variations in seasonal sensitivity in relation to epifauna and infauna that would influence the effect of the discharges.

Stochastic and deterministic modelling of a wet buckle discharge near the State waters boundary indicates that chemical additive concentrations are expected to be below the 95% species protection within 900 m and below the 99% species protection threshold within 2.1 km of the discharge location. Therefore, there is potential for a small, localised area of epifauna to be exposed to lethal and sub-lethal concentrations near the release location. Due to rapid dispersion of the treated seawater, uptake and bioaccumulation of contaminants is not expected to occur in sediments or benthic organisms beyond the point of release.

In the event of a wet buckle along the trunkline route chemical concentrations resulting from discharge of treated seawater can be expected to drop below the 99% species protection level between ~1-2 km as described above, depending on the location of the discharge along the trunkline route. Section 4.5.2 describes benthic habitats and communities along the trunkline. The seabed along the trunkline route is generally featureless with occasional areas of hard substrate that may support patches of benthic filter feeder communities. Within the Montebello AMP (KP 109 and KP 192) soft sediment habitats predominate, with calcarenite outcrops supporting sponges, whips and gorgonians. Denser areas of filter feeders also occur in areas with more complex seabed structure. These areas of filter feeding benthos (sponges, soft corals, gorgonians, hydroids, sea pens, crinoids) are widely representative of benthos found both within the AMP (Advisian, 2019a) and regionally (potential impacts to the values of the AMP are evaluated further in the AMP section below). Rock pinnacles have been observed approximately 360 m south of the trunkline at KP 206 as shown in Figure 4-7. The pinnacles are isolated forms restricted to an area about 100 m long x 75 m wide, and do not constitute continuous reef. The structures provide habitat for a diverse range of epifaunal and demersal species that commonly occur across the NWMR, including a very low percentage cover of soft coral growing on top of the pinnacles. It is not possible to predict where a wet buckle could occur. In the unlikely event a wet buckle discharge is required along the trunkline route in proximity to the more complex benthic habitats described (e.g. within the Montebello AMP or near the rock pinnacles), the extent of seabed exposure at levels where impacts could occur will be small and likely

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limited to within 100s of metres of the discharge location. Potential impacts will be localised and temporary as the one-off discharge disperses rapidly within the water column. While a diverse range of epifaunal and demersal species are reported to be associated with these habitats, they commonly occur across the NWMR. Receptor sensitivity of epifauna and infauna is considered low to medium along the trunkline route. The Impact Significance Level of a wet buckle discharge on epifauna and infauna has therefore been identified as Slight (E). There are no variations in seasonal sensitivity in relation to epifauna and infauna that would influence the effect of the discharges.

#### **Marine mammals, Fish (Pelagic and Demersal) and Marine reptiles**

Marine fauna could pass through the plume however exposure would be at low concentrations and short duration. The 99% species protection threshold and the subsequent mixing zone have been determined through the application of chronic exposure ecotoxicological tests on sensitive life stage marine fauna. The toxicity of the water treatment chemicals is less on larger life forms as demonstrated by the WET testing (Table 6-20) which determined that the NOEC for a fish species was 12.5 mg/L. Modelling predicted that this would occur out to a maximum of 30 m from the release location. In addition, marine fauna are transient and as such are unlikely to be exposed to sufficient concentrations or durations of the discharge constituents to elicit a response.

The location of the FCGT discharge at the PLET does not overlap any BIAs for protected marine fauna and given the water depth (about ~940 m), toxicity and temporary nature of the discharge, impacts to protected species are not expected. The deep water and predominantly featureless, flat soft sediment seabed at the PLET discharge location is of low complexity and low productivity (see Section 4.5) and reduces the species diversity and richness of pelagic and demersal fish assemblages. Although sporadic upwelling events and increased primary productivity along the along the northern and southern boundaries of the Exmouth Plateau KEF may temporarily increase fish diversity, overall, fish fauna is not expected to be abundant at the FCGT discharge location, which is located >50 km from the periphery of the plateau. Continental slope fish communities off the west coast of Australia (including the Exmouth Plateau) have a low overall density, which appears to be linked to the low biological productivity of the overlying waters (Williams et al., 2001). Based on the low likelihood of pelagic species being exposed to the discharge; the ability of fish to move away from the discharge plume and the potential for toxic impacts to occur from contingent treated seawater discharge potential impacts are considered to be localised and short-term with no lasting effect at the population or bioregional scale.

Fish are perhaps most susceptible in their early life stages, particularly during egg and planktonic larval stages. Six key indicator commercial fish, and spawning depth ranges / seasonality, on the NWS are as follows:

- red emperor – depth range 10–180 m, spawns Sept–June (bimodal peaks Sept–Nov and Jan–Mar);
- Rankin cod – depth range 10–150 m, spawns June–Dec and Mar (peak Aug–Oct);
- goldband snapper – depth range 50–200 m, spawns Oct–May;
- bluespotted emperor – depth range 5–110 m, spawns Jul–Mar;
- ruby snapper – depth range 150–480 m, spawns Dec–Apr (peak Jan–Mar); and
- Spanish mackerel – depth range 1 m to at least 50 m, spawns Sept–Jan.

The Operational Area overlaps the depth ranges for these key indicator commercial fish species, and the timing of activities means that there would be overlap with peak spawning periods for a number of these species. However, it is believed that all of these species undergo group spawning throughout their range, rather than aggregating at specific locations. Therefore, that treated seawater is discharged impacts to fish spawn would be limited to a localised area around the discharge location and not expected to have a substantial adverse effect on the population.

In the event of a wet buckle, discharge volumes of treated seawater will be limited to the length of pipeline requiring dewatering and will similarly result in a temporary reduction in water quality with negligible effect to protected fauna. In the unlikely event of a wet buckle discharge located in the humpback whale migration BIA, pygmy blue whale migration BIA or interneresting BIAs and Habitat Critical for a number of marine turtle species, during the migration / nesting season, potential impacts to protected marine fauna are highly unlikely given the potential toxicity, temporary nature of the discharge and transient nature of marine fauna.

Stochastic and deterministic modelling indicates that potential impacts to protected marine fauna, as well as pelagic or demersal fish species from wet pre-commissioning discharges or wet buckle contingency discharges, are expected to be confined to the vicinity of discharge point.

#### **KEFs**

The FCGT discharge location at the PLET occurs 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 dewatering 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 the dewatering 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, 2008).

The Trunkline Project Area has a minor overlap with the Continental Slope Demersal Fish Communities KEF at ~KP 200 for about 9 km (<0.05% overlap), and with the Ancient Coastline at 125 m depth contour KEF at ~KP190 for about 3 km (0.03% overlap). The Ancient Coastline KEF includes areas of hard substrate, and higher diversity and species richness relative to surrounding areas of predominantly soft sediment. The submerged coastline may facilitate mixing of the water column enhancing productivity. Combined with greater diversity of sessile benthic organisms, this may increase abundance of pelagic species such as fishes and cetaceans, impacts to which are discussed above. The Continental Slope Demersal Fish Communities KEF represents high levels of endemism of demersal fish species. Based on the assessment above, in the unlikely event of a wet buckle discharge within a KEF, potential impacts to the values of the KEF would be highly localised to the Trunkline Project Area and temporary in nature as the treated seawater disperses within the water column.

Impacts from contingent discharges of treated seawater will have no lasting effect on KEFs.

**AMPs**

There is potential for wet buckle contingency discharges to occur as the trunkline is laid within the Montebello Marine Park. The maximum discharge volume would be ~210,000 m<sup>3</sup> based on the trunkline length at KP 190. As described above, chemical concentrations resulting from a wet buckle discharge can be expected to drop below the 99% species protection level within ~1-2 km of the discharge location. The North-west Marine Parks Network Management Plan (DNP, 2018a) lists the natural values of the Montebello AMP as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act. Potential impacts to benthic communities and marine fauna are assessed above. Impacts are predicted to have no lasting effect due to the one-off nature of the discharge and rapid dispersion of the treated seawater. Even if more than one wet buckle event was to occur in the AMP there is no potential for cumulative impact given the chemical additives will degrade and dilute rapidly following discharge, with no predicted accumulation within seabed sediments. Potential impacts to the natural values of the AMP, and intrinsically linked cultural values, are to be a magnitude of 'no lasting effect'.

For activities occurring within the Montebello Marine Park, the short-term and localised impacts of routine and non-routine discharges in open waters will not be inconsistent with the values and objective of the Multiple Use Zone (VI) to provide for ecologically sustainable use and the conservation of ecosystems, habitats and native species. Impacts are therefore not inconsistent with the objectives of the North-west Marine Parks Network Management Plan or the zoning of the Montebello and Dampier AMPs (DNP, 2018a).

**Changes to the functions, interests or activities of other users**

The NWSTF is the only Commonwealth-managed fishery expected to be active within the PLET discharge location. Given the water depth of the full Trunkline discharge location (about 1400 m) and the temporary nature and rapid dilution of the discharge, impacts from the discharge of treated seawater such as changes to the functions, interest or activities of Commonwealth are unlikely.

Similarly, wet buckle discharge near the State waters boundary overlaps the State-managed fisheries, however given the rapid dilution of the discharge and hence duration of exposure, impacts are considered unlikely. In the event of a wet buckle, the dispersal of dewatering fluids is likely to be temporary and disperse rapidly in the water column.

In general, given the oceanic locations and the localised and temporary nature of the contingent treated seawater discharges, exposure to fisheries is considered negligible.

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	Injury/mortality or behavioural changes to marine fauna	High value species	No lasting effect	Slight (E)
Marine Mammals		High value species	No lasting effect	Slight (E)

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Marine Reptiles		High value species	No lasting effect	Slight (E)
KEFs	Change in habitat	High value habitat	No lasting effect	Slight (E)
AMP	Injury or behavioural changes to marine fauna	High value	No lasting effect	Slight (E)

**Overall Impact Significance Level:** The overall impact significance level for routine and non-routine discharges from pre-commissioning and pipelay activities is E based on slight effect to high value receptors (marine fauna). The impact significance levels for water quality is consistent with those rated in the Scarborough OPP. This impact assessment assumes worst case seasonality (i.e. presence of fauna during migratory or breeding periods for example) and sensitive localities and is thus a conservative approach. Contingent trunkline discharges that occur outside of sensitive receptor localities and seasonalities will result in a lower impact potential. Potential impacts to marine fauna and the Montebello AMP have been additionally assessed in this EP. There is no change in magnitude of impact (no lasting effect).

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
No additional controls identified				
<b>Good Practice</b>				
Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints as described 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 <b>C 7.4</b>
Chemicals used to treat hydrotest water will be Hazard Quotient Colour Band 'Gold' (or OCNS Grouping E) with no substitution or product warnings	F: Yes. CS: Minimal cost. Standard practice.	By limiting hydrotest chemicals to Hazard Quotient Colour Band 'Gold' (or OCNS Grouping E) consequence of impacts can be reduced to ALARP. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes <b>C 8.1</b>
Pipeline pre-commissioning procedures developed and followed including: <ul style="list-style-type: none"> <li>The volumes and concentrations of all inhibitor chemicals injected will be monitored</li> </ul>	F: Yes CS: Minimal cost, standard practice	Monitoring of chemical concentrations and volumes during FCGT will reduce the likelihood of prolonged undetected leaks and reduce the likelihood of over supply subsequently reducing associated toxicological effects in the receiving environment	Benefits outweigh cost/sacrifice	Yes <b>C 8.2</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<p>and total chemical use will be measured</p> <ul style="list-style-type: none"> <li>An automatic chemical injection skid will be used to maintain dosage at required rate and trigger equipment spread shut down if upper or lower limit breached.</li> </ul>				
<p>A wet buckle recovery procedure is developed and implemented which:</p> <ul style="list-style-type: none"> <li>Ensures dosing of water treatment chemicals is no greater than 350ppm where the activity is designed to involve pre-flooding of the Trunkline with treated seawater;</li> <li>Ensures dosing of water treatment chemicals is no greater than 700ppm if the activity involves pre-flooding of the trunkline with un- treated seawater followed by only treated freshwater slugs.</li> </ul>	<p>F: Yes CS: Minimal cost. Standard practice.</p>	<p>A wet buckle recovery procedure will ensure the activity can be carried out in a planned manner and ensure water dosing treatment concentrations will align with those used to inform impact assessment</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p>Yes <b>C 8.3</b></p>
<p>A pipelay installation procedure will be in use which includes:</p> <ul style="list-style-type: none"> <li>Alarm systems for dynamic positioning to indicate loss of vessel position.</li> <li>A buckle monitoring system and certified anchor winch system (SWLB) will be in use.</li> <li>Minimum tensioner alarms to ensure trunkline catenary is maintained.</li> <li>Pipelay monitoring system.</li> </ul>	<p>F: Yes. CS: Minimal cost. Standard practice.</p>	<p>Pipelay installation procedures will reduce the likelihood of a wet buckle occurring that would require contingency dewatering.</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p>Yes <b>C 8.5</b></p>
<p>ROV inspection on commencement of hydrotest discharge at discharge outlet, with onshore pressure monitoring throughout discharge</p>	<p>F: Yes. CS: Minimal cost. Standard practice.</p>	<p>Monitoring during hydrotest discharge may increase identification of issues and reduce likelihood of problems going undetected for an extended period of time, ultimately having a potential to reduce environment impact of leaks, for example.</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p>Yes <b>C 8.6</b></p>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
Implement post discharge study if wet buckle carried out in the Montebello Marine Park which includes: <ul style="list-style-type: none"> <li>Water sample collection at the discharge location</li> <li>Undertake hindcast modelling based on discharge concentration</li> <li>Confirm EPO 8 and 9 have been met</li> </ul>	F: Yes CS: monetary cost of monitoring activities (i.e. equipment, vessel hire, sample analysis), logistics of sample collection or monitoring equipment deployment (i.e. use of ROV, transport of samples to shore for analysis) and expertise required to develop an effective sampling program for dynamic, open ocean discharge environment.	Post discharge monitoring for contingent wet buckle recovery can serve to validate discharge modelling and impact predictions. In locations such as the Montebello Multiple Use Zone, monitoring can aid in showing impact meets requirements of the North-west Marine Parks Network Management Plan	Benefits outweigh cost/sacrifice in the Montebello Multiple Use Zone	Yes  <b>C 8.4</b>
Post discharge environmental monitoring for contingent FCGT to determine efficacy of control measures and confirm discharge outcomes in comparison to impact assessment.	F: Yes CS: monetary cost of monitoring activities (i.e. equipment, vessel hire, sample analysis), logistics of sample collection or monitoring equipment deployment (i.e. use of ROV, transport of samples to shore for analysis) and expertise required to develop an effective sampling program for dynamic, open ocean (predominantly deep water) discharge environment.	Post discharge environmental monitoring can serve to validate discharge modelling and impact predictions. In the case of contingent FCGT of the Scarborough Trunkline, where discharge is carried out at the PLET, there is no perceived benefit to monitoring due to the existing environment at the location and impact potential using conservative discharge modelling.	Cost/sacrifice outweighs benefit.	No
Allow time (3 days) between pre-flooding/cleaning and hydrotest discharges to allow for concentrations to fall below defined 99% species protection level	F: Yes CS: Cost may be incurred depending on schedule	Avoids environmental concentration of additives becoming cumulative	Benefits outweigh cost/sacrifice.	Yes  <b>C 8.7</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Professional Judgement - Eliminate</b>				
No subsea discharges to be released to the marine environment	F: Not feasible. While the base case is for dry pre-commissioning of the trunkline, wet pre-commissioning must be retained as a contingency option 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
Onshore disposal of hydrotest water (full trunkline volume)	F: No. Not feasible due to large volume of treated seawater and unavailability of suitable storage / discharge location.  CS: Not considered, control not feasible.	Not considered – control not feasible	Not considered –Control not feasible.	No
Onshore disposal of hydrotest water (State Waters component volume)	F: No. Not feasible due to large volume of treated seawater and unavailability of suitable storage / discharge location. Cannot be discharged to nearshore waters and impractical to relocate the large volume of water.  CS: Not considered, control not feasible.	Not considered – control not feasible	Not considered –Control not feasible.	No
Dry pre-commissioning of Trunkline to be progressed as base-case with FCGT /wet pre-commissioning only carried out as contingency	F: Yes. CS: Potential loss of production due to loss of integrity, possibly leading to	Not carrying out wet pre-commissioning / FCGT would remove discharges of hydrotest water (treated	Benefits outweigh cost/sacrifice.	Yes <b>C 8.8</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
	a larger environmental incident if FCGT not carried out when required	seawater), which would reduce environmental impact potential		
No wet buckle discharge in the Montebello Multiple Use Zone	F: No. Not feasible due to nature of a wet buckle i.e. it is an unplanned event that results in seawater ingress into the Trunkline during installation as a result of an incident. There is no ability to keep laying or move the existing line out of the MUZ. The need to remove seawater from the line is urgent to reduce likelihood of future integrity issues. CS: Not considered, control not feasible.	Not considered – control not feasible	Not considered –Control not feasible	No
No contingent FCGT / wet pre-commissioning discharges near the State Waters Boundary	F: Yes CS: Financial / timing costs of alternative integrity testing options for the shore crossing / nearshore section of Trunkline should it be required for the Trunkline Safety Case.	Not carrying out FCGT / wet pre-commissioning discharges in more sensitive receptor environments such as ~KP 33 (in the humpback whale migration BIA, as well as in interesting BIAs and Habitat Critical for a number of marine turtle species) can reduce impact potential, particularly during important seasonal events such as migration and nesting.	Benefits outweigh cost/sacrifice.	Control incorporated into contingent wet testing activity design.

**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 FCGT fluid discharges. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.

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<b>Demonstration of Acceptability</b>
<p><b>Acceptability Criteria and Assessment</b></p> <p>The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5):</p> <ul style="list-style-type: none"> <li>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.</li> <li>EPOs and controls in the Scarborough OPP that are relevant to routine and non-routine discharges have been adopted.</li> <li>There are no changes to internal/external context specific to this risk from the Scarborough OPP. Impacts from discharges during trunkline installation and pre-commissioning was raised during stakeholder consultation (Appendix F, Table 1)</li> </ul> <p><b>Acceptability Statement:</b></p> <p>The impact assessment has determined that, given the adopted controls, pre-commissioning and pipelay discharges are unlikely to result in an impact significance level greater than Slight. A number of BIAs for EPBC Act listed Threatened or Migratory species overlap the Trunkline Project Area, although no BIAs overlap the location of FCGT discharge at the PLET (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.</p> <p>The potential impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of these discharges to a level that is broadly acceptable.</p>

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 3</b></p> <p>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.</p>	<p><b>C 8.1</b></p> <p>Chemicals used to treat hydrotest water will be Hazard Quotient Colour Band 'Gold' (or OCNS Grouping E) with no substitution or product warnings</p>	<p><b>PS 8.1</b></p> <p>Chemicals used to treat hydrotest water (i.e. oxygen scavenger, biocide, dye) will be Hazard Quotient Colour Band 'Gold' (or OCNS Grouping E) with no substitution or product warnings</p>	<p><b>MC 8.1.1</b></p> <p>Records demonstrate chemicals used to treat hydrotest water Hazard Quotient Colour Band 'Gold' (or OCNS Grouping E) with no substitution or product warnings</p>
<p><b>EPO 6</b></p> <p>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.</p>	<p><b>C 8.2</b></p> <p>Pipeline pre-commissioning procedure(s) developed and followed including:</p> <ul style="list-style-type: none"> <li>The volumes and concentrations of all inhibitor chemicals injected will be monitored and total chemical use will be measured</li> <li>An automatic chemical injection skid will be used to maintain dosage at required rate and trigger equipment spread shut down if</li> </ul>	<p><b>PS 8.2</b></p> <p>Monitoring of chemicals injected confirms concentration in FCGT does not exceed 550 ppm</p>	<p><b>MC 8.2.1</b></p> <p>Records from chemical injection monitoring show dosage does not exceed 550 ppm and shutdown is initiated if limits reached</p>
<p><b>EPO 8</b></p> <p>Undertake Scarborough Trunkline Installation within the Montebello AMP in a manner that will not be inconsistent with</p>			

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p>the objective of the multiple use zone</p> <p><b>EPO 9</b> Changes to water quality in the Montebello Marine Park as a result of the trunkline installation will not be inconsistent with the objective of the multiple use zone.</p> <p><b>EPO 16</b> 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.</p> <p><b>EPO 17</b> 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.</p> <p><b>EPO 18</b> Undertake the Petroleum Activities Program in a manner that prevents substantial change in sediment quality, that may adversely impact on biodiversity, ecological integrity, social amenity or human health.</p>	<p>upper or lower limit breached.</p> <p><b>C 8.3</b> A wet buckle recovery procedure is developed and implemented which:</p> <ul style="list-style-type: none"> <li>Ensures dosing of water treatment chemicals is no greater than 350ppm where the activity is designed to involve pre-flooding of the Trunkline with treated seawater;</li> <li>Ensures dosing of water treatment chemicals is no greater than 700ppm if the activity involves pre-flooding of the trunkline with untreated seawater followed by only treated freshwater slugs.</li> </ul> <p><b>C 8.4</b>  <ul style="list-style-type: none"> <li>Implement post discharge study if wet buckle carried out in the Montebello Marine Park which includes:</li> <li>Water sample collection at the discharge location</li> <li>Undertake hindcast modelling based on discharge concentration</li> <li>Confirm EPO 8 and 9 have been met</li> </ul> </p> <p><b>C 8.5</b> A pipelay installation procedure will be in use which includes:</p> <ul style="list-style-type: none"> <li>Alarm systems for dynamic positioning to indicate loss of vessel position.</li> <li>A buckle monitoring system and certified anchor winch</li> </ul>	<p><b>PS 8.3</b> Develop a wet buckle recovery procedure which includes water treatment dosing requirements depending on philosophy (i.e. pre-flooding the line with treated seawater vs. flooding with un-treated seawater followed by high dosage freshwater slugs)</p> <p><b>PS 8.4</b> Implement post discharge study should a wet buckle recovery be carried out in the Montebello Marine Park</p> <p><b>PS 8.5</b> Pipelay installation procedure is in use during pipelay activities.</p>	<p><b>MC 8.3</b> Records from chemical injection monitoring show dosage does not exceed required concentration</p> <p><b>MC 8.4.1</b> Wet buckle discharge dilution study report</p> <p><b>MC 8.5.1</b> Records of pipelay installation procedure</p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	system (SWLB) will be in use. <ul style="list-style-type: none"> <li>• Minimum tensioner alarms to ensure trunkline catenary is maintained.</li> <li>• Pipelay monitoring system.</li> </ul>		
	<b>C 8.6</b> ROV inspection on commencement of hydrotest discharge at discharge outlet, with onshore pressure monitoring throughout discharge.	<b>PS 8.6</b> Monitoring of hydrotest discharge at commencement of release at outlet (by ROV) and throughout discharge (by Onshore pressure monitoring) undertaken	<b>MC 8.6.1</b> Evidence of monitoring
	<b>C 8.7</b> Allow time (3 days) between pre-flooding/cleaning and hydrotest discharges to allow for concentrations to fall below defined 99% species protection level.	<b>PS 8.7</b> 3 days (72 hrs) elapsed between pre-flooding /cleaning and hydrotest discharge if carried out	<b>MC 8.7.1</b> Records demonstrate time lapse between discharges
	<b>C 8.8</b> Dry pre-commissioning of Trunkline to be progressed as base-case with FCGT /wet pre-commissioning only carried out as contingency	<b>PS 8.8</b> Dry pre-commissioning of Trunkline progressed as a base case to avoid hydrotest discharge, reducing environmental impact.	<b>MC 8.8.1</b> Records show dry pre-commissioning preference
	<b>C 7.4</b> Refer to Section 6.7.7	<b>PS 7.4</b> Refer to Section 6.7.7	<b>MC 7.4</b> Refer to Section 6.7.7

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## 6.8 Unplanned Activities (Accidents, Incidents, Emergency Situations)

### 6.8.1 Quantitative Spill Risk Assessment Methodology

Quantitative hydrocarbon spill modelling was performed by RPS (RPS, 2019, 2021), 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 200 hypothetical spills, at three locations, 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 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.

In addition to the stochastic modelling, single-trajectory modelling (deterministic) was performed to assess potential worst-case trajectories based on the stochastic modelling runs. The deterministic simulations are therefore representative of single spill events under certain wind and current conditions. The deterministic simulations were performed to represent the fastest time to shoreline contact and the largest volume ashore from a single model run.

#### 6.8.1.1 Worse Case Scenarios

In assessing the potential impacts of an unplanned hydrocarbon release, representative worst-case scenarios (in terms of volume and location) were assessed. A summary of the credible hydrocarbon spill scenarios that could occur during the Petroleum Activities Program are provided in Table 6-24.

**Table 6-24: Credible hydrocarbon spill scenarios**

Scenario		Hydrocarbon type	Maximum credible volume	Location
1	Hydrocarbon release due to vessel collision. Refuelling tanker or PV is governing scenario.	Marine diesel	2000 m <sup>3</sup>	Any location within Operational Area
2	Bunkering loss of containment. Hose failure is governing scenario.	Marine diesel	55 m <sup>3</sup>	Within Operational Area
3	Release from onboard equipment. PV HPU is governing scenario.	Hydraulic fluid	8 m <sup>3</sup>	Within Operational Area

For the Petroleum Activities Program, the worst-case scenario was identified to be an instantaneous surface release of 2,000 m<sup>3</sup> of marine diesel, representing loss of the largest vessel fuel tank integrity (construction vessel) following a collision. As the worst-case scenario, the assessment of impacts will also address the potential impacts of other credible lesser releases.

To inform the impact assessment, quantitative hydrocarbon spill modelling was undertaken for the worst-case hydrocarbon release scenario (RPS, 2019, 2021).

It is not practicable for spill modelling to be undertaken at every potential release location within the Operational Area. Release locations were selected by considering locations that would:

- have the greatest potential environmental consequence to the receiving environment (closest to sensitive receptors) and / or
- be considered at greater risk of a spill event.

Accordingly, a release of marine diesel was modelled at three representative locations; two along the trunkline at sensitive locations, and one at the end of the trunkline (FPU) (Table 6-25), these are also shown in Figure 4-1. The Hydrocarbon EMBA has been defined using a combination of all three locations.

**Table 6-25: Spill locations for 2000 m<sup>3</sup> marine diesel instantaneous release**

Location	Coordinates	Water Depth
Location 1: Outside Mermaid Sound	20° 21' 3.28" S, 116° 42' 5.58" E	31 m
Location 2: Within the Montebello Australian Marine Park	20° 03' 1.44" S, 115° 31' 35.04" E	74 m
Location 3: FPU / end of trunkline	19° 53' 54.72" S; 113° 14' 19.56" E	930 m

### 6.8.1.2 Hydrocarbon Characteristics

Marine diesel is characterised by a large mixture of low- and semi- to low-volatile compounds (95%) and persistent hydrocarbons (5%). Additionally, marine diesel typically contains less than 3% aromatic hydrocarbons that could potentially dissolve in the water column. MDO has been selected for modelling as it represents a worst case outcome; vessels as part of the Petroleum Activities Program will not use HFO or IFO.

Table 6-26 summarises hydrocarbon characteristics of marine diesel.

**Table 6-26: Characteristics of marine diesel**

Physical Properties	Result
Density (kg/m <sup>3</sup> )	829 (at 25 °C)
American Petroleum Institute (API)	37.2

Physical Properties	Result
Dynamic viscosity (centipoises; cP)	4 (at 25 °C)
Pour Point (°C)	-7
Gas to condensate ratio (bbl/MMscf)	N/A
Oil Property Category	II
Oil Persistence Classification	Non-persistent

### 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.

The summary of all the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the Hydrocarbon EMBA which is driven by the worst-case credible hydrocarbon spill scenario, which in this instance is the loss of 2000 m<sup>2</sup> (modelled volume) in the event of a vessel collision resulting in a fuel tank rupture. As described in Section 4.1, the Hydrocarbon EMBA also is used to define the EMBA (Figure 4-1), which includes the dredging Zone of Influence (Section 6.7.2). The Hydrocarbon EMBA has been defined using a combination of all three modelling locations.

As the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, the Hydrocarbon EMBA combines the potential spatial extent of the different fates. It is noted that the hydrocarbon thresholds used to define the EMBA for this Petroleum Activities Program are more conservative than the thresholds adopted in the Scarborough OPP (SA0006AF0000002, Rev 5, Section 7.2.6). Consequently, the EMBA for this activity is larger than the EMBA defined in the Scarborough OPP.

The Hydrocarbon 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 (100-200 simulations in total). The Hydrocarbon EMBA therefore represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from all modelling runs.

Surface and accumulated shoreline hydrocarbon concentrations are expressed as grams per square metre (g/m<sup>2</sup>), 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 Hydrocarbon EMBA. These hydrocarbon thresholds are presented in Table 6-27 and described in the following subsections.

Woodside recognises that hydrocarbons may be visible beyond the Hydrocarbon EMBA at lower concentrations than the ecological impact thresholds defined in Table 6-27. The threshold for visible surface oil (1 g/m<sup>2</sup>) 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 6-27, may also result in socio-cultural impacts. Potential impacts to socio-cultural values assessed within these EMBA's include:

- protected areas
- national and Commonwealth Heritage Listed places
- tourism and recreation
- fisheries.

**Table 6-27: Summary of environmental impact thresholds applied to the quantitative hydrocarbon spill risk modelling results**

Hydrocarbon Type	EMBA				Socio-cultural EMBA
	Surface Hydrocarbon (g/m <sup>2</sup> )	Entrained hydrocarbon (ppb)*	Dissolved aromatic hydrocarbon (ppb)*	Accumulated hydrocarbon (g/m <sup>2</sup> )	Surface Hydrocarbon (g/m <sup>2</sup> )
Marine Diesel	10	100	50	100	1

\* Hydrocarbon thresholds used to define the EMBA for this Petroleum Activities Program are more conservative than the thresholds adopted in the Scarborough OPP (SA0006AF0000002, Rev 5, Section 7.2.6). Consequently, the EMBA for this activity is larger than the EMBA defined in the Scarborough OPP.

#### 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  $\geq 10$  g/m<sup>2</sup> for diesel. This is equivalent to dull metallic colours based on the relationship between film thickness and appearance (Bonn Agreement, 2015) (Table 6-28). This threshold concentration is geared towards informing potential oiling impacts for wildlife groups and habitats that may break through the surface slick from the water or the air (for example: emergent reefs, vegetation in the littoral zone and air-breathing marine reptiles, cetaceans, seabirds and migratory shorebirds).

Thresholds for registering biological impacts resulting from contact of surface slicks have been estimated by different researchers at about 10 to 25 g/m<sup>2</sup> (French et al., 1999; Koops et al., 2004; NOAA, 1996). Potential impacts of surface slick concentrations in this range for floating hydrocarbons may include harm to seabirds through ingestion from preening contaminated feathers, or the loss of the thermal protection of their feathers. The 10 g/m<sup>2</sup> 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 to 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 contact. The 10 g/m<sup>2</sup> threshold is considered appropriate for diesel delineating potential chronic and acute effects to ecosystems.

A lower concentration of 1 g/m<sup>2</sup>, which represents a rainbow sheen on the surface (Table 6-28), has also been used to define a wider area within which socio-cultural impacts to the visual amenity of the marine environment may occur. This wider area is referred to as the ‘socio-cultural EMBA’.

**Table 6-28: The Bonn Agreement oil appearance code**

Appearance (following Bonn visibility descriptors)	Mass per area (g/m <sup>2</sup> )	Thickness (µm)	Volume per area (L/km <sup>2</sup> )
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 and Sergy (1994) define accumulated hydrocarbon  $< 100$  g/m<sup>2</sup> to have an appearance of a stain on shorelines. French-McCay (2009) defines accumulated hydrocarbons  $\geq 100$  g/m<sup>2</sup> to be the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates

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living in intertidal habitat. A threshold of  $\geq 100$  g/m<sup>2</sup> 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**

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.

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.

#### **6.8.1.8 Scientific Monitoring**

A planning area for scientific monitoring is also described in Section 5.7 of the Oil Spill Preparedness and Response Mitigation Assessment (Appendix D). This planning area has been set with reference to the low exposure entrained value of 10 ppb detailed in NOPSEMA Bulletin #1 Oil Spill Modelling (2019).

A scientific monitoring program would be activated following a Level 2 or 3 unplanned marine diesel 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(s) 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														
<b>Relevant Activities</b> Vessel Operations – Section 3.11.2			<b>Existing Environment</b> Physical Environment – Section 4.4 Habitats and Biological Communities – Section 4.5 Protected Species – Section 4.6 Protected Places – Section 4.8 Socio-economic values – Section 4.9					<b>Stakeholder consultation</b> 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			✓		✓	✓	✓	A	B	1	M	LC S GP PJ	Acceptable if ALARP	EPO 19
Description of Source of Impact/Risk														
<p><b>Background</b></p> <p>The temporary presence of the project vessels in the Operational Area will result in a navigational hazard for commercial shipping within the immediate area (as discussed in Section 6.7.1). This navigational hazard could result in a third party vessel colliding with the project vessels which could result in a loss of containment.</p> <p>Project vessels (as described in Section 3) typically have multiple isolated tanks and the largest volume of a single tank for these types of vessels is in the order of 250 m<sup>3</sup> (for survey vessels, support vessels and pipe transport vessels) to 2000 m<sup>3</sup> (for a refuelling vessel). Tank locations are midship (not bow or stern). It was determined that the maximum single tank capacity of these project vessels used for the Petroleum Activities Program is 2000 m<sup>3</sup> (Table 6-24).</p> <p>Some vessels are able to operate on either heavy fuel oil (HFO) or marine diesel, however for this Petroleum Activities Program vessels will not use heavy fuel oil or intermediate fuel oil (IFO).</p> <p>In the highly unlikely event of a collision event during the Petroleum Activities Program, as described above, the vessel will have the capability to pump fuel from a ruptured tank to a tank with spare volume in order to reduce the potential volume of fuel released to the environment.</p> <p><b>Industry Experience</b></p> <p>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).</p> <p>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 to -30 L of oil into the marine environment as a result of a collision between a tug and support vessel off Barrow Island. Two other vessel collisions occurred in 2010, one in the port of Dampier, where a support vessel collided with a barge being towed. Minor damage was reported and no significant injury to personnel or</p>														
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contamination occurred. The second 2010 vessel collision involved a vessel under pilot control in port connected with a vessel alongside a wharf causing it to sink. No reported contamination 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 occurring.

From 2010 to 2011, the ATSB's annual publication defines the individual safety action factors identified in marine accidents and incidents: 42% related to navigation action (2011). Of those, 15% related to poor communication and 42% related to poor monitoring, checking and documentation. 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 environmental risk analysis and evaluation undertaken 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 (Table 6-24). The scenarios considered damage to single and multiple fuel storage tanks in the vessel due to various combinations of vessel to vessel collisions. In summary:

- It is not a credible scenario that the total storage volume of the project vessel would be lost, as fuel is stored in more than one tank. Credible spill volumes are calculated as per AMSA recommendations (AMSA, 2015)
- It is highly unlikely that the full volume of the largest storage tank on a project vessel would be lost.

A collision between a project vessel with a third party vessel (i.e., commercial shipping/fisheries) at any location within the Operational Area was assessed as being credible. However, this is highly unlikely given the standard vessel operations and equipment in place to prevent collision at sea, the short duration of activities in the Operational Area, the typical low speeds of vessels undertaking the Petroleum Activities Program and the construction and placement of storage tanks. Potential spill volumes for this scenario are summarised in Table 6-29.

A collision between project vessels within the Petroleum Activities Program was considered credible, however it is not credible that the collision would meet the loss of containment conditions listed above (i.e., vessel speed, location etc.) to cause a failure of fuel storage tank(s).

Given the offshore location and depths within the Operational Area, vessel grounding is not considered a credible risk.

**Table 6-29: Summary of credible hydrocarbon spill scenario as a result of vessel collision**

Scenario	Hydrocarbon Volumes	Preventative and Mitigation Controls	Credibility
Loss of containment from a project vessel resulting from a collision with the PV (or two vessels operating within the Petroleum Activities Program)	Largest worst-case volume of a single tank is 2000 m <sup>3</sup> . This is representative of either a refuelling tanker or the PV, and the largest fuel tank of all other vessels is expected to be smaller than this.	Operational procedures and practises such as reduced vessel speeds in proximity to the PV, SIMOPS plans where different work scopes operating near each other and validation of vessel master/crew competency and training.	<b>Not Credible.</b> While collision between project vessels is credible, such as a bunkering vessel with the PV, it is not credible that the collision would be of sufficient energy to cause fuel tank rupture and result in a loss of containment.
Loss of containment from a project vessel (as described in Section 3) resulting from a collision with a third-party vessel.	Largest worst-case volume of a single tank is 2000 m <sup>3</sup> . This is representative of either a refuelling tanker or the PV, and the largest fuel tank of all other vessels is expected to be smaller than this.	Typically double wall, tanks which are located mid-ship (not bow or stern). Vessels are not anchored (with the possible exception of the SWLB) and move at low speeds when relocating within the Operational Areas or providing stand-by cover. Normal maritime procedures would apply during such vessel movements.	<b>Credible</b> Project vessel – third party vessel collision could potentially result in the release from a fuel tank.

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**Quantitative Hydrocarbon Risk Assessment**

Modelling of a 2000 m<sup>3</sup> surface release of marine diesel was undertaken for three locations within the Trunkline Project Area (refer to Table 6-25 for a summary of spill release locations) (RPS 2019, 2021).

The modelling assessed the extent of a marine diesel spill volume of 2000 m<sup>3</sup> for all seasons, using an historic sample of wind and current data for the region. The modelling was conducted by RPS using a three-dimensional hydrocarbon spill trajectory and weathering model, updated in 2021 (SIMAP, Spill Impact Mapping and Analysis Program) (RPS, 2019, 2021). The model ran 100-200 annualised spill trajectories, varying the start time (and hence prevailing wind and current conditions). This approach ensures that the predicted transport and weathering of a hydrocarbon slick is subjected to a range of oceanic conditions.

**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 6-30.

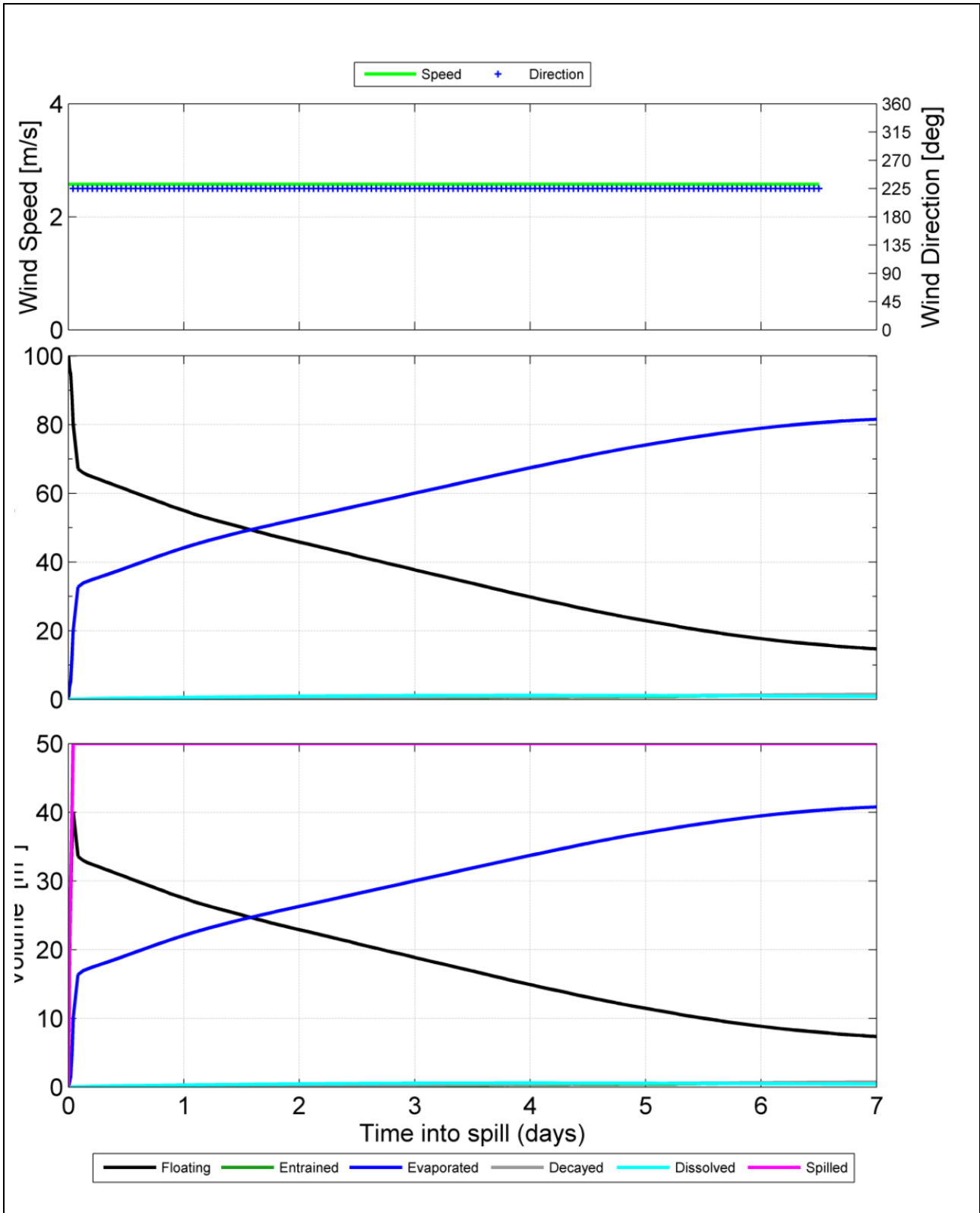
When spilled into the warm tropical and subtropical marine environment expected, MDO spreads rapidly and forms a very thin slick, with most of the volatile components typically evaporating in less than a day. Approximately 41% by mass of this oil is predicted to evaporate over the first couple of days depending on the prevailing wind conditions, with further evaporation slowing over time. The heavier (low volatility) components of the oil tend to entrain into the upper water column due to wind-generated waves, but can subsequently resurface depending on conditions (RPS, 2019, 2021).

RPS conducted weathering simulations to illustrate the potential behaviour of MDO when exposed at the water’s surface under constant (5 knots) and variable wind conditions (Figure 6-7 and Figure 6-8). Variable wind conditions generate greater entrainment of the hydrocarbon in the water column. Approximately 24 hours after the spill, around 45% of the oil mass is forecast to have entrained and a further 36% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds will tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6 m/s).

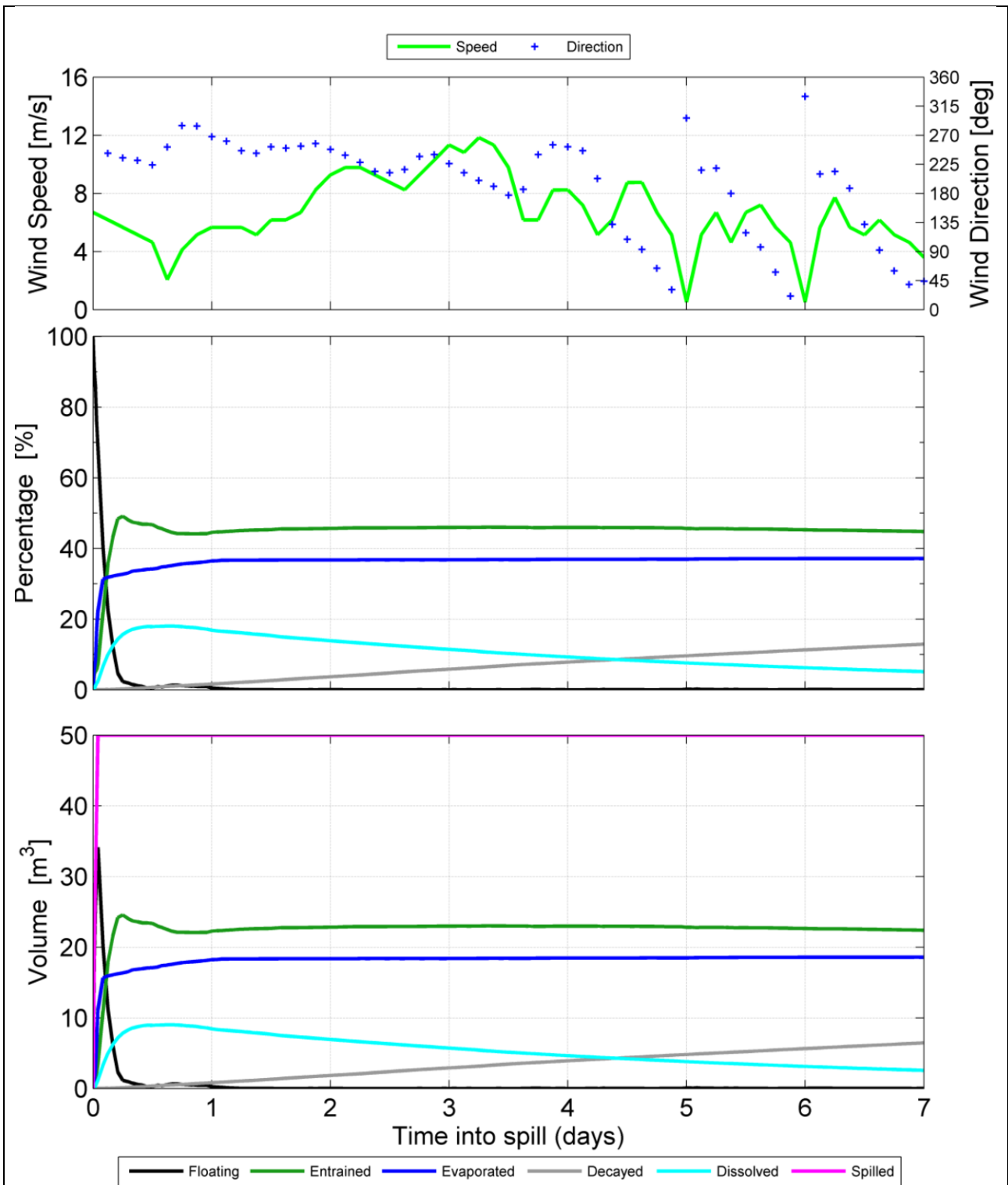
Variable wind does result in a higher percentage of biological and photochemical degradation, with an approximate rate of 1.8% per day. Whereas the constant wind scenario shows ~50% of the oil evaporates within 36 hours with negligible entrainment, but with a rate of only ~0.2% degradation per day.

**Table 6-30: Characteristics of the marine diesel**

Hydrocarbon type	Initial density (g/cm <sup>3</sup> ) at 25 °C	Viscosity (cP @ 25 °C)	Component	Volatiles (%)	Semi volatiles (%)	Low volatility (%)	Residual (%)
			BP (°C)	<180	180–265	265-380	>380
				Non-Persistent			Persistent
Marine diesel	0.829	4.0	% of total	6	34.6	54.4	5



**Figure 6-7: 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<sup>3</sup> over 1 hour) and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature.**



**Figure 6-8: 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<sup>3</sup> over 1 hour) and subject to variable wind at 27 °C water temperature and 25 °C air temperature.**

## Detailed Impact Assessment

### Assessment of Potential Impacts

#### Environment that May Be Affected

The Hydrocarbon EMBA for the Petroleum Activities Program is based on stochastic modelling which compiles data from 100-200 hypothetical worst-case spills under a variety of weather and metocean conditions (as described in Section 6.8.1) (RP, 2019, 2021). The EMBA therefore covers a larger area than the area that would be affected during any one single spill event, and therefore represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from all modelling runs. The trajectory of a single spill would have a considerably smaller footprint.

As described in Section 6.8.1, three hydrocarbon spill locations were modelled in order to represent the range of locations of where vessel collision could occur within the Operational Area (refer to Table 6-25). The EMBA has been defined using a combination of all three locations, as shown in Figure 4-1, the largest extent of the Hydrocarbon EMBA is based on the entrained threshold from the modelled locations and therefore includes the results from 600 runs. In the event of a spill the EMBA would be much smaller and is intermittent e.g. plume travels away from the release location based on prevailing currents and winds directions. Therefore one area is not exposed to hydrocarbons above thresholds for the entire simulation.

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 discussed for each fate.

#### Surface Hydrocarbons

Modelling of surface hydrocarbons from Location 1 (outside Mermaid Sound) indicates that concentrations equal to or greater than the 10 g/m<sup>2</sup> threshold could potentially be found up to 29 km from the spill site. Dampier Archipelago (2% probability), Dampier Marine Park (2% probability) and WA Coastline (3% probability) are predicted to receive floating oil at concentrations equal to or greater than 10 g/m<sup>2</sup>. Deterministic modelling was undertaken, to assist with response planning, which demonstrates that hydrocarbon exposure at discrete locations will be intermittent. For example a worst case modelling run demonstrated that the Dampier Archipelago would be exposed to surface hydrocarbons for less than two days (Day 1-2) and then again from Day 11-13 (42 hours). After which it was not predicted to be exposed to any surface hydrocarbons.

Modelling of surface hydrocarbons from Location 2 (Montebello AMP) indicates that concentrations equal to or greater than the 10 g/m<sup>2</sup> threshold could potentially be found up to 39 km from the spill site. Given that this spill location lies within the Montebello AMP receptor area, floating oil at concentrations equal to or greater than 100 g/m<sup>2</sup> are forecast with a probability of 100%. Probabilities of floating oil contact at the 10 g/m<sup>2</sup> threshold are forecast to be less than 1% for all other shoreline receptors.

Modelling of surface hydrocarbons from Location 3 (FPU/end of trunkline) indicates that concentrations equal to or greater than the 10 g/m<sup>2</sup> threshold could potentially be found up to 113 km from the spill site. No shoreline receptors are predicted to be contacted by surface hydrocarbons concentrations. Floating oil at the 10 g/m<sup>2</sup> threshold is predicted to arrive at the surface waters of the Gascoyne Marine Park receptor with a probability of 1% after 64 hours.

#### Accumulated Hydrocarbons

Potential for accumulation of oil on shorelines is predicted to be low from a spill at Location 1 (outside Mermaid Sound), with a maximum accumulated volume of 3 m<sup>3</sup> and a maximum local accumulated concentration on shorelines of 156 g/m<sup>2</sup> forecast at Dampier Archipelago and a probability of 1% above the ecological threshold concentration (100 g/m<sup>2</sup>).

Accumulated hydrocarbons above threshold concentrations (≥100 g/m<sup>2</sup>) were not predicted by the modelling to occur from a spill at Location 2 (Montebello AMP) or Location 3 (FPU/end of trunkline).

#### Entrained Hydrocarbons

Entrained oil at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to around 414 km from a spill at Location 1 (outside Mermaid Sound). The Dampier Marine Park (54%), Dampier Archipelago (51%), Montebello Islands (8%), Muiron Islands MMA-WHA (2%), Pilbara – Middle (Islands and Shoreline, 5%), Pilbara Islands – Northern (Islands and Shoreline, 7%), Montebello Marine Park (12%), Montebello State Marine Park (8%), Muiron Islands (2%), Eighty Mile Beach (1%), Gascoyne Marine Park (2%) and WA Coastline (51%) receptors are predicted to receive entrained oil concentrations at the 100 ppb threshold with probabilities in parenthesis, respectively. The maximum entrained oil concentration is forecast as 10,911 ppb within the Dampier Archipelago.

Entrained oil at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to around 630 km from a spill at Location 2 (Montebello AMP). The following receptors are predicted to receive entrained oil concentrations at the 100 ppb threshold with probabilities in parenthesis: Montebello Marine Park (78%), Muiron Islands Marine Management Area – World Heritage Area (MMA-WHA, 13%), Argo-Rowley Terrace MP (1%), Barrow Island (5%), Montebello Islands (8%), Ningaloo Coast (Middle, Middle WHA, North, North WHA, max. 12%), Ningaloo RUZ (12%), Pilbara Islands – Southern Island Group (5%), Rankin Bank (1%), Shark Bay (Open Coast and WHA, 1% and 1%, respectively), Bernier & Dorre Islands (1%), Lowendal Islands (1%), Montebello State Marine Park (13%), Muiron Islands (11%), Gascoyne Marine Park (11%) and WA Coastline (10%). The maximum entrained oil concentration is forecast as 156,954 ppb within the Montebello Marine Park.

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Entrained oil at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to around 918 km from a spill at Location 3 (FPU/end of trunkline). The Gascoyne Marine Park, Carnarvon Canyon Marine Park and Abrolhos Islands Marine Park receptors are predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 10%, 1% and 1%, respectively. The maximum entrained oil concentration is forecast as 7236 ppb within the Gascoyne Marine Park.

Similar to the fate of surface hydrocarbons, deterministic modelling has indicated entrained hydrocarbons above threshold, 100 ppb, will be limited in duration at discrete locations e.g. at the release location entrained hydrocarbons is only expected to remain above 100 ppb, for a maximum of 18 hours.

#### **Dissolved Hydrocarbons**

Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 90 km from a spill at Location 1 (outside Mermaid Sound). Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted at Dampier Archipelago (probability 15%), Dampier Marine Park (probability 24%) and the WA Coastline (probability 15%), with a maximum dissolved aromatic hydrocarbon concentration forecast of 635 ppb.

Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 216 km from a spill at Location 2 (Montebello AMP). Barrow Island (probability 1%), Montebello Islands (probability 1%), Rankin Bank (probability 1%), Montebello Marine Park (probability 49%), Montebello State Marine Park (probability 1%) and the WA Coastline (probability 1%) are receptors predicted to receive dissolved aromatic hydrocarbon concentrations at the 50 ppb threshold. The maximum dissolved aromatic hydrocarbon concentration is forecast as 1990 ppb within the Montebello Marine Park.

Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 244 km from a spill at Location 3 (FPU/end of trunkline). The Gascoyne Marine Park is the only receptor predicted to receive dissolved aromatic hydrocarbon concentrations at the 50 ppb threshold with a probability of 3%. The maximum dissolved aromatic hydrocarbon concentration is forecast as 462 ppb within the Gascoyne Marine Park.

#### **Water Quality**

An unplanned release of marine diesel, would result in a change in water quality, affecting the ambient water quality within the Hydrocarbon EMBA as follows:

- The highly-mixed, open water location and characteristics of marine diesel will result in rapid evaporation and dispersion.
- Water quality would be reduced and is predicted to be at or above biological effect concentrations for the surrounding marine waters over the Montebello Marine Park. The submerged Tryal Rocks (30-40 m depth) within the Montebello Marine Park has the potential to be exposed to entrained hydrocarbons at or greater than 100 ppb. The waters surrounding this submerged habitat would show a reduction in quality due to hydrocarbon contamination above background and/or national/international quality standards.
- Exposure to significant habitats will be at low levels such that no significant habitats or ecosystem function or integrity will be impacted (as discussed in the receptor sections).
- Based on the deterministic modelling, in the event of a spill, the potential area exposed to hydrocarbons is much smaller and only for a short period of time given the nature of MDO to evaporate and spread quickly. Therefore, the magnitude of a potential impact to water quality associated with a release of hydrocarbons is slight.

#### **Plankton**

Injury/mortality to planktonic species may occur due to a change in water quality following an unplanned hydrocarbon release as follows:

- Plankton in contact with the spill source at the time of release may be impacted, and there is potential for localised mortality.
- Given hydrocarbon characteristics, expected rapid weathering and then degradation of the entrained component, and the relatively quick recovery times of plankton, unplanned marine diesel releases are not expected to have a substantial adverse effect on plankton life cycle and spatial distribution and potential impacts would be limited to slight.

#### **Fish, Sharks and Rays**

Injury/mortality to fish species may occur due to a change in water quality following an unplanned hydrocarbon release as follows:

- While fish and sharks do not generally break the sea surface, individuals may feed at the surface for a short period. Marine diesel is expected to quickly disperse and evaporate, limiting the exposure.
- Fishes are more susceptible to the effects of spilled oil (particularly entrained and dissolved) in their early life stages, particularly during egg and planktonic larval stages, which can become entrained in spilled oil. Effects will be greatest in the upper 10 m of the water column where hydrocarbon concentrations are higher.
- 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).
- More subtle, chronic effects on the life history of fishes may occur due to early life stage exposure. Effects may include disruption to complex behaviour such as predator avoidance, reproductive and social behaviour (Hjermann et al., 2007).
- Adult fishes exposed to low hydrocarbon concentrations are likely to metabolise the hydrocarbons and excrete the derivatives, with studies showing that fishes can metabolise petroleum hydrocarbons and that accumulated hydrocarbons are released from tissues when the fish is returned to hydrocarbon-free sea water.
- A BIA for whale shark foraging overlaps the Operational Area between KP 72 and KP 199, as well as the EMBA. Whale sharks may transit offshore open waters when migrating to and from Ningaloo Reef, where they aggregate for feeding from March to July. Whale sharks are versatile feeders, filtering large amounts of water over their gills, catching planktonic and nektonic organisms (Jarman and Wilson, 2004). It is therefore possible that surface and/or entrained hydrocarbon and/or dissolved aromatic hydrocarbon could come in contact with, or be ingested by whale sharks migrating or aggregating in the area at the time of release

The magnitude of a potential impact to fish associated with a release of hydrocarbons is slight. 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 release is not expected to have a substantial adverse effect on the population, or spatial distribution of fish/sharks/rays.

#### **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 as follows:

- A range of marine mammal species were identified as potentially occurring within the Operational Area and EMBA (Section 4.6.3).
- BIAs of marine mammals listed as MNES overlap the Trunkline Project Area, including humpback whales (migration and resting BIAs) and pygmy blue whales (northbound and southbound migrations). BIAs of MNES listed marine mammals also overlap the EMBA (Section 4.6.3), including humpback whales (migration and resting BIAs), dugongs (foraging and breeding, nursing, calving BIAs) and pygmy blue whales (northbound and southbound migrations, distribution and foraging BIAs).
- Humpback and/or pygmy blue whale populations may be impacted if the hydrocarbon release occurs during the seasonal migration periods. Such disruption could include behavioural impacts (e.g. avoidance of impacted areas), sub-lethal biological effects (e.g. skin irritation, irritation from ingestion or inhalation, reproductive failure) and, in rare circumstances, death.
- Dugongs may be indirectly impacted via habitat loss due to reduction in seagrass due to from contact with entrained hydrocarbons. Direct impacts to dugongs could occur through foraging or ingesting seagrass coated with hydrocarbon.
- Marine mammals may come in direct contact with hydrocarbons should they surface within the slick. Impacts to the species can include irritation of eyes/mouth and potential illness from hydrocarbon ingestion.
- Entrained and dissolved hydrocarbons may lead to sub-lethal physical and toxic effects, such as irritation and illness. The likelihood of toxic effects occurring is increased closer to the release location.
- Conservation advice for some marine mammal species identify noise interference and vessel disturbance as key threats. While hydrocarbon spills are not explicitly identified as a threat, conservation advice for the sei whale does include the management of physical disturbance and development activities. No explicit management actions are identified relevant to hydrocarbon spills.

The magnitude of a potential impact to marine mammals associated with a release of hydrocarbons is slight. Although potential impacts could include mortality or sub-lethal injury/illness of marine mammals, this is 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 marine diesel 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.

### **Marine Reptiles**

A change in marine fauna behaviour or injury/mortality to marine reptiles may occur due to direct contact or a change in water quality leading to indirect impacts following an unplanned hydrocarbon release as follows:

- Flatback, green, loggerhead and hawksbill turtle internesting BIAs overlap the Trunkline Project Area and EMBA (Section 4.6.2). Flatback, green and hawksbill turtles also have internesting habitat critical overlapping with the Trunkline Project Area, particularly, for the Dampier Archipelago.
- Hydrocarbons in surface waters may impact turtles when they surface to breathe and inhale toxic vapours.
- 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). Oiling can also irritate and injure skin, which is most evident on pliable areas such as the neck and flippers (Lutcavage et al., 1995).
- Turtles within shallow coastal waters may be impacted as they feed in shallow water coral and macroalgae habitats, and therefore, may ingest hydrocarbons.
- Accumulated hydrocarbons on shorelines could impact marine fauna that utilise beaches including marine turtles, dependent upon the timing of a release. However volumes of accumulated hydrocarbons are low.

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). Although potential impacts could include mortality or sub-lethal injury/illness of marine reptiles, this is 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, unplanned hydrocarbon releases are not expected to substantially modify, destroy or isolate an area of important habitat for migratory species.

### **Seabirds and Migratory Shorebirds**

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 as follows:

- Breeding and foraging BIAs for EPBC listed seabird species that overlap the EMBA may be impacted by a hydrocarbon release (Section 4.6.4).
- Seabirds and migratory shorebirds are particularly vulnerable to contact with surface hydrocarbons, which may mat feathers, leading 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).
- Lethal or sub-lethal physical and toxic effects may occur to seabirds, including irritation of eyes/mouth and potential illness.
- It is commonly thought that marine diesel does not cause problems for wildlife due to the lack of visible oiling, however may be toxic (WAOWRP, 2014). 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).
- Shorebirds may encounter accumulating hydrocarbons on shorelines at feeding, roosting and breeding sites. The risk of impact is greater should an unplanned hydrocarbon release occur within the chick-rearing period, where adults forage closer to breeding colonies.

The magnitude of a potential impact to seabirds and migratory shorebirds associated with a release of hydrocarbons is having no lasting effects (from change in fauna behaviour) and slight (from injury/mortality to fauna). Although potential impacts could include mortality or sub-lethal injury/illness of birds, this is 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, unplanned hydrocarbon releases are not expected to substantially modify, destroy or isolate an area of important habitat for migratory species.

### **Coral**

A change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release as follows:



- Significant areas of coral are known to occur fringing the Dampier Archipelago, (such the outer islands of Legendre etc), Montebello Islands, Rankin Bank, Barrow Island, Lowendal Islands, the Ningaloo Coast and Muiron Islands, Shark Bay outer islands of Bernier & Dorre Islands, all within the EMBA.
- Exposure to entrained hydrocarbons ( $\geq 100$  ppb) has the potential to result in lethal or sub-lethal toxic effects to corals and other sensitive sessile benthos within the upper water column, including upper reef slopes (subtidal corals) and reef flat (intertidal corals).
- Sub-lethal effects to corals may include polyp retraction, changes in feeding, bleaching (loss of zooxanthellae), increased mucous production resulting in reduced growth rates and impaired reproduction (Negri and Heyward, 2000).
- Should a hydrocarbon release occur at the time of coral spawning (at potentially affected coral locations), there is the potential for a significant reduction in successful fertilisation and coral larval survival, due to the sensitivity of coral in early life stages to hydrocarbons (Negri and Heyward, 2000).

Due to the short duration of the spill (i.e. instantaneous release, and short exposure time as demonstrated by deterministic modelling), the confined spatial extent and the tendency of MDO to remain on the sea surface, significant exposure over a large scale is limited. Unplanned hydrocarbon releases from Scarborough are not expected 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. Based on the assessment, the magnitude of a potential impact to coral associated with a release of hydrocarbons is moderate (i.e. medium-term impacts to ecosystem/habitat service on a far-field scale).

#### **Seagrass and Macroalgae**

A change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release as follows:

- Seagrass and macroalgae communities are found in shallow waters surrounding islands of the Dampier Archipelago, Barrow Island, Lowendal Islands, Muiron Islands, Pilbara Islands, Bernier and Dorre Islands, Montebello Islands as well as Eighty Mile Beach AMP, Ningaloo Coast North/North WHA and South/South WHA and RUZ and Shark Bay Open Ocean Coast. Modelling predicts that both Dampier and Montebello marine parks are predicted to be intersected with entrained hydrocarbons over the exposure thresholds (RPS, 2019, 2021). In particular, the Montebello Marine Park has a 78% probability, with high concentrations of entrained hydrocarbons. This is to be expected, as the release location modelled is within the marine park boundaries.
- Exposure to entrained hydrocarbons may result in mortality of seagrass and macroalgae, depending on actual entrained aromatic hydrocarbon concentrations received and duration of exposure. Physical contact with entrained hydrocarbon droplets could cause sub lethal stress, causing reduced growth rates and reduced tolerance to other stress factors.
- Seagrass and macroalgal beds in the intertidal and subtidal zone may be susceptible to impacts from entrained hydrocarbons. Toxicity effects can also occur due to absorption of soluble fractions of hydrocarbons into tissues.

While areas where seagrass and macroalgae can occur may be exposed, given the hydrocarbon characteristics, expected rapid weathering to below impact thresholds, any exposure would be to a limited area and short-term, and as such an unplanned hydrocarbon release is not expected to result in a level of exposure to seagrass and macroalgae that would cause an adverse impact on marine ecosystem functioning or integrity results. Based on the assessment, the magnitude of a potential impact to seagrass and macroalgae associated with a release of hydrocarbons is having no lasting effect.

#### **Mangroves**

A change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release as follows:

- Modelling predicts that there is 1% probability of shorelines being contacted over the exposure threshold for any release location at Dampier Archipelago, Barrow Island and WA coastline, with the maximum local volume predicted to accumulate of 3 m<sup>3</sup>. Both shorelines include some areas of mangroves (RPS, 2019, 2021).
- Mangroves are considered to have a high sensitivity to hydrocarbon exposure.
- Mangroves can be impacted by heavy or viscous oil, or emulsification, that covers the trees breathing pores thereby asphyxiating the subsurface roots, which depend on the pores for oxygen (IPIECA, 1993).
- Hydrocarbons deposited on the aerial roots can block the pores used to breathe, or interfere with the trees salt balance, resulting in sub-lethal and potentially lethal effects.
- Acute impacts to mangroves can be observed within weeks of exposure, whereas chronic impacts may take months to years to detect.

Given hydrocarbon characteristics, rapid weathering, the low predicted volume ashore (3 m<sup>3</sup>), an unplanned release is not expected to have a substantial adverse impact on marine ecosystem functioning or integrity. Based on the assessment, the magnitude of a potential impact to mangroves associated with a release of hydrocarbons is having no lasting effect.

#### **Shoreline Habitats**

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A change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release as follows:

- Hydrocarbons that contact sandy shores may be incorporated into fine sediments through mixing in the surface layers from wave energy, penetration down worm burrows and root pores.
- Hydrocarbon in the intertidal zone can adhere to sand particles however high tide may remove some or most of the hydrocarbon from the sediments. Accumulated hydrocarbons  $\geq 100 \text{ g/m}^2$  could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat (French-McCay, 2009).
- Coastal habitats that occur on the coastline within the EMBA include saltmarshes and mangroves around the Dampier Archipelago.

Given hydrocarbon characteristics, rapid weathering and the low predicted volume ashore ( $3 \text{ m}^3$ ), an unplanned release is not expected to have a substantial adverse impact on marine ecosystem functioning or integrity at exposed shorelines. Based on the assessment, the magnitude of a potential impact to shoreline habitats associated with a release of hydrocarbons is assessed as having no lasting effect.

#### **Saltmarshes**

A change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release as follows:

- Areas of saltmarshes are known to occur within the Dampier Archipelago and WA Coastline, with both areas potentially receiving shoreline accumulation above  $100 \text{ g/m}^2$ . Modelling predicts that there is 1% probability of these shorelines being contacted over the exposure threshold, with a maximum local volume predicted to accumulate of  $3 \text{ m}^3$ .
- Hydrocarbons can enter saltmarsh systems during the tidal cycles, if the estuary/inlet is open to the ocean. Similar to mangroves, this can lead to a patchy distribution of the oil and its effects, due to different areas within the inlets at different tidal heights.
- Hydrocarbons can adhere to the marshes, coating the stems from tidal height to sediment surface.

Given hydrocarbon characteristics, rapid weathering and the low predicted volume ashore ( $3 \text{ m}^3$ ), an unplanned release is not expected to have a substantial adverse impact on marine ecosystem functioning or integrity at exposed shorelines. Based on the assessment, the magnitude of a potential impact to saltmarsh associated with a release of hydrocarbons is assessed as having no lasting effect.

#### **Key Ecological Features**

Change in habitat may occur due to a change in water or sediment quality that could impact KEFs. The location of the KEFS within the EMBA are presented in Section 4.7. As marine diesel typically remains in the top 10 m of the water column and rapidly weathers, in-water hydrocarbons are only likely to intersect with seafloor and demersal values in shallower waters. The water depths and potential impacts to the six relevant KEFs are summarised as follows:

- Exmouth Plateau KEF (intersects the Operational Area and EMBA): Values and sensitivities are related to seafloor features. Receptors on the seafloor are not expected to be impacted by a surface release of hydrocarbons, given the water depths ( $\sim 930 \text{ m}$ ). However, these seafloor features may promote enhanced upwelling; potential impacts to plankton and fishes are discussed above.
- Ancient Coastline KEF (intersects the Operational Area and EMBA): The KEF includes areas of hard substrate and higher diversity and species richness relative to surrounding areas of predominantly soft sediment. Given the minimum water depth in this KEF is 115 m, seafloor receptors are unlikely to be impacted by a surface hydrocarbon release. However, the submerged coastline may facilitate mixing of the water column enhancing productivity. Combined with greater diversity of sessile benthic organisms, this may increase abundance of pelagic species such as fishes and cetaceans, impacts to which are discussed above.
- Continental Slope Demersal Fish Communities KEF (intersects the Operational Area and EMBA): The KEF represents high levels of endemism of demersal fish species. Considering the minimum water depths of this KEF are 220–500 m and 750–1,000 m, impacts to demersal fishes are unlikely to occur. However, the values of the

KEF may support higher order consumers, such as pelagic fish and shark species, impacts to which are discussed above.

- Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF (intersects the EMBA): Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, predatory fishes and seabirds are known to occur in the KEF due to its enhanced productivity, impacts to which are discussed above.
- Commonwealth Waters Adjacent to Ningaloo KEF (intersects the EMBA): The spatial boundary of this KEF, as defined in the National Conservation Values Atlas, is the waters contained in the existing Ningaloo AMP and is described below.
- Glomar Shoal KEF (intersects the EMBA on the Rowley shelf at depths of 33 m to 77 m): The values of the KEF are high productivity and aggregations of marine life, impacts to which are discussed above.
- Western demersal slope and associated fish communities KEF (intersects the EMBA): The KEF supports high biodiversity of demersal fish communities, impacts to which are discussed above.
- Wallaby Saddle (intersects the EMBA): The KEF is defined for its high productivity and aggregations of marine life. These values apply to both the benthic and pelagic habitats within the feature, impacts to which are discussed above.

#### **AMPs**

Quantitative stochastic spill modelling predicts contact above the relevant exposure threshold at the AMPs:

- Montebello Marine Park
- Dampier Marine Park
- Gascoyne Marine Park
- Ningaloo Marine Park
- Argo-Rowley Terrace Marine Park
- Carnarvon Canyon Marine Park
- Abrolhos Marine Park
- Eighty Mile Beach Marine Park
- Shark Bay Marine Park

The hydrocarbon spill is unlikely to result in significant impacts to AMPs based on the nature of the spilled hydrocarbons. Natural values for the AMPs include:

- Marine turtle BIAs for Dampier, Gascoyne, Ningaloo, Montebello and Eighty Mile Beach Marine Parks
- Humpback whale migration BIAs for Montebello, Dampier and Gascoyne Marine Parks, Ningaloo Marine Park
- Pygmy blue whale possible foraging area and migration BIA for Gascoyne, Ningaloo Marine Parks and Montebello Marine Park
- Dugong breeding, nursing, calving habitat BIA for Exmouth Gulf and Ningaloo Marine Park
- Diverse fish communities for the Dampier, Gascoyne, Ningaloo or Montebello Marine Parks, as well as Argo-Rowley Terrace Marine Park, Carnarvon Canyon Marine Park, Abrolhos Islands Marine Park, Eighty Mile Beach Marine Park
- Diverse fish communities specifically within the Continental Slope Demersal Fish Communities KEF for Gascoyne and Ningaloo Marine Parks
- Whale shark foraging habitat BIAs for Montebello and Ningaloo Marine Parks
- Seabird breeding habitat BIAs for Montebello, Dampier, Gascoyne and Ningaloo Marine Parks, as well as Argo-Rowley Terrace Marine Park, Carnarvon Canyon Marine Park, Abrolhos Islands Marine Park, Eighty Mile Beach Marine Park
- Seabird foraging habitat BIAs for Dampier, Gascoyne, Ningaloo, Montebello, Argo-Rowley Terrace, Carnarvon Canyon, Abrolhos Islands and Eighty Mile Beach Marine Parks.

While this results in exposure to hydrocarbons for some of the natural values of the marine parks, the impacts will be temporary as the MDO evaporates and degrades and moves with ocean currents. The evaluation of impacts to specific receptors are detailed in the individual receptor assessments above and below. Based on the assessment, the magnitude of a potential impact to AMPs associated with a release of hydrocarbons is slight.

#### **State Waters Protected Places**

Quantitative spill modelling predicts contact above the relevant exposure threshold at the following protected places (RPS, 2019, 2021):

- Barrow Island
- Muiron Islands MMA-WHA
- Montebello State Marine Park

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- Thevenard Island Nature Reserve
- Ningaloo State Marine Park

The conservation values of these areas have been previously described but include foraging and migratory pathways for some species of seabirds, whale shark, turtles and whales.

A hydrocarbon spill is unlikely to result in significant impacts to State protected places based on the nature of the spilled hydrocarbons. Based on the evaluation, the magnitude of potential impact to protected places from unplanned hydrocarbon releases is assessed as slight.

#### **Commonwealth and State-managed Fisheries**

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 as follows:

- 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.
- Fishes have a high capacity to metabolise these hydrocarbons while crustaceans (such as prawns) have a reduced ability (Yender et al., 2002).
- 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).
- The only Commonwealth-managed fishery expected to be active within the vicinity of the Operational Area is the NWSTF (Section 4.9.2). However, given the fishing method (i.e. trawl) and operations in deep water areas (>200 m) of this fishery, no significant impact from a marine diesel spill is predicted.
- Presence of hydrocarbons in areas used by State-managed fisheries (Section 4.9.2) may occur, however given the type of hydrocarbon and duration of exposure, no significant impact from a marine diesel spill is expected to occur.
- A major hydrocarbon spill could result in the establishment of an exclusion zone around the spill affected area. Within this exclusion zone there would be a temporary prohibition on fishing activities for a designated period of time, and subsequent potential for economic impacts to affected commercial fishing operators.

Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and low fishing effort, an unplanned release is not expected to have a substantial adverse effect on the sustainability of commercial fishing; or to interfere with other marine users. Therefore the magnitude of a potential impact to commonwealth and state managed fisheries associated with a release of hydrocarbons is no lasting effect

#### **Tourism and Recreation and Cultural Values**

Change in marine fauna behaviour, injury or mortality to marine fauna, change in aesthetic value and change to the functions, interests or activities of other users would impact tourism and recreation following an unplanned hydrocarbon release as follows:

- Charter fishing, diving, snorkelling, marine fauna (whale, marine turtle and dolphin) watching and cruises are the main commercial tourism activities in and adjacent to the NWMR. With the exception of offshore charter fishing, most marine tourism activities occur in State waters (DEWHA, 2008).
- Any impacts to receptors that provide nature-based tourism features (e.g. whales) may cause a subsequent negative impact to recreation and tourism activities. There is also potential for impacts to the wider service industry (hotels, restaurants and their supply chain) and local communities in terms of economic loss as a result of spill impacts to tourism.

Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, small volumes predicted ashore an unplanned release is not expected to interfere with other marine users to a greater extent than necessary. Based on the assessment, the magnitude of a potential impact to tourism and recreation associated with a release of hydrocarbons is slight.

#### **Shipping**

A change to the functions, interests or activities of other users may impact shipping following an unplanned hydrocarbon release as follows:

- In the event of a large 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 marine diesel would only be in place for days after release, therefore physical displacement to vessels is unlikely to be a significant impact.
- The environmental performance outcome for shipping is to not interfere with other marine users, including shipping, to a greater extent than is necessary for the exercise of right conferred by the titles granted.

Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, short duration of displacement, and the offshore location of the Operational Area, unplanned releases of 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**

A change in water quality and change to the functions, interests or activities of other users may impact industry following an unplanned hydrocarbon release, summarised from Section 7.2.6.2 of the Scarborough OPP (SA0006AF0000002, Rev 5) as follows:

- In the event of a major hydrocarbon spill, an exclusion zone may be established around the spill affected area. This could result in exclusion of other users such as vessels used by the mining and petroleum industries.
- The closest oil and gas development to the Scarborough field is Chevron Australia’s Jansz lo fields, about 100 km to the east. However, all infrastructure is subsea and is not expected to be impacted by a marine diesel spill.

**Defence**

A change to the functions, interests or activities of other users may impact Defence following an unplanned hydrocarbon release as follows:

- In the event of a major hydrocarbon spill, an exclusion zone may be established around the spill affected area. This could impact Defence by restricting areas where training or exercises can be conducted, for a designated period of time.
- Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of marine diesel would only be in place for days after release, therefore physical displacement to vessels is unlikely to be a significant impact.

**Summary of Assessment Outcomes**

Receptor	Impact	Receptor Sensitivity	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, sharks and rays	Change in fauna behaviour	High species value	Minor (D)	Highly Unlikely	Moderate
	Injury/mortality to fauna		Minor (D)	Highly Unlikely	Moderate
Marine mammals	Change in fauna behaviour	High species value (i.e. pygmy blue whale)	Minor (D)	Highly Unlikely	Moderate
	Injury/mortality to fauna		Minor (D)	Highly Unlikely	Moderate
Marine reptiles	Change in fauna behaviour	High species value (i.e. flatback, green and hawksbill turtles)	Slight (E)	Highly Unlikely	Low
	Injury/mortality to fauna		Minor (D)	Highly Unlikely	Moderate
Seabirds and migratory shorebirds	Change in fauna behaviour	High species value	Slight (E)	Highly Unlikely	Low
	Injury/mortality to fauna		Minor (D)	Highly Unlikely	Moderate
Coral	Change in habitat	High value habitat	Major (B)	Highly Unlikely	Moderate
Seagrass	Change in habitat	High value habitat	Slight (E)	Highly Unlikely	Low
Macroalgae	Change in habitat	Low value habitat (homogenous)	Negligible (F)	Highly Unlikely	Low

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Mangroves	Change in habitat	High value habitat	Slight (E)	Highly Unlikely	Low
Shoreline habitats	Change in habitat	Low value habitat	Negligible (F)	Highly Unlikely	Low
Saltmarshes	Change in habitat	High value habitat	Slight (E)	Highly Unlikely	Low
KEFs	Change in habitat	High value	Minor (D)	Highly Unlikely	Moderate
AMPs	Change in habitat	High value	Minor (D)	Highly Unlikely	Moderate
State Waters Protected Places	Change in habitat	Medium value	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
Tourism and recreation	Changes to the functions, interests or activities of other users	Medium value users	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
Defence	Changes to the functions, interests or activities of other users	Medium value	Slight (E)	Highly Unlikely	Low
<p><b>Overall Risk Consequence:</b> The overall risk consequence/risk rating for an unplanned hydrocarbon release in the event of a vessel collision is Moderate based on a Major consequence to the high value receptor (coral). The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.</p>					

**Table 6-31: Environment that May Be Affected – Key receptor locations and sensitivities with the summary hydrocarbon spill contact for a 2,000 m<sup>3</sup> instantaneous marine diesel spill at three release locations**

Environmental setting	Location / name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions (Woodside's Risk Management Procedure (WM0000PG10055394))																								Probability of hydrocarbon contact (diesel) (%)																						
		Physical		Biological																	Socio-economic and Cultural					note: the probability is based on stochastic modelling of 100 - 200 hypothetical worst-case spills under a variety of weather and metocean conditions																						
		Water Quality	Sediment Quality	Marine Primary Producers					Other Communities / Habitats					Protected Species							Other Species			Socio-cultural EMBA		Ecological EMBA																						
		Open water – (pristine)	Marine Sediment – (pristine)	Coral reef	Seagrass beds / Macroalgae	Mangroves	Spawning/nursery areas	Open water – Productivity/upwelling	Non biogenic coral reefs	Offshore filter feeders and/or Deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries / tributaries / creeks / lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions and fur seals)	Marine turtles (including foraging and interesting areas and significant nesting beaches)	Sea snakes	Whale sharks	Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident /Demersal Fish	Fisheries – commercial	Fisheries – traditional	Tourism and Recreation	Protected Areas / Heritage – European and Indigenous / Shipwrecks	Offshore Oil and Gas Infrastructure (topside and subsea)	Surface hydrocarbon (1-10 g/m <sup>2</sup> )	Accumulated hydrocarbons (10–100 g/m <sup>2</sup> )	Surface hydrocarbon (≥10 g/m <sup>2</sup> )	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m <sup>2</sup> )												
Offshore	Dampier AMP	✓		✓	✓	✓	✓	✓					✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3		2	54	24								
	Montebello AMP	✓	✓	✓			✓	✓					✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100	78	49									
	Gascoyne AMP	✓	✓				✓		✓				✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1		11	3								
	Shark Bay WHA	✓	✓		✓		✓						✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1									
	Argo-Rowley Terrace AMP	✓					✓						✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1								
	Carnarvon Canyon AMP	✓	✓				✓		✓					✓								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1								
	Abrolhos Islands AMP	✓	✓	✓			✓	✓		✓				✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1							
	Eighty Mile Beach AMP	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1						
Submerged shoals	Glomar Shoals	✓	✓	✓			✓						✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
	Rankin Bank	✓	✓	✓			✓	✓		✓				✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1	1			
Islands	Montebello Islands (including State Marine Park)	✓	✓	✓	✓	✓	✓			✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13	1		
	Lowendal Islands	✓	✓	✓	✓	✓	✓			✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1			

Environmental setting	Location / name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions (Woodside's Risk Management Procedure (WM0000PG10055394))																									Probability of hydrocarbon contact (diesel) (%)									
		Physical		Biological																				Socio-economic and Cultural					note: the probability is based on stochastic modelling of 100 - 200 hypothetical worst-case spills under a variety of weather and metocean conditions							
		Water Quality	Sediment Quality	Marine Primary Producers					Other Communities / Habitats					Protected Species										Other Species	Fisheries – commercial	Fisheries – traditional	Tourism and Recreation	Protected Areas / Heritage – European and Indigenous / Shipwrecks	Offshore Oil and Gas Infrastructure (topside and subsea)	Socio-cultural EMBA		Ecological EMBA				
				Open water – (pristine)	Marine Sediment – (pristine)	Coral reef	Seagrass beds / Macroalgae	Mangroves	Spawning/nursery areas	Open water – Productivity/upwelling	Non biogenic coral reefs	Offshore filter feeders and/or Deepwater benthic communities	Nearshore filter feeders	Sandy shores	Estuaries / tributaries / creeks / lagoons (including mudflats)	Rocky shores	Cetaceans – migratory whales	Cetaceans – dolphins and porpoises	Dugongs	Pinnipeds (sea lions and fur seals)	Marine turtles (including foraging and intersting areas and significant nesting beaches)	Sea snakes	Whale sharks							Sharks and rays	Sea birds and/or migratory shorebirds	Pelagic fish populations	Resident /Demersal Fish	Surface hydrocarbon (1-10 g/m2)	Accumulated hydrocarbons (10-100 g/m2)	Surface hydrocarbon (≥10 g/m2)
Mainland (nearshore waters)	Barrow Island	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1		5	1		
	Muiron Islands (MMA-WHA)	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					13		
	Pilbara Islands – Southern Island Group	✓	✓		✓		✓		✓		✓	✓		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					7		
	Pilbara Islands - Middle Pilbara - Islands & Shoreline	✓	✓		✓		✓		✓		✓	✓		✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					5		
	Bernier & Dorre Islands	✓	✓	✓	✓	✓	✓				✓	✓			✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					1		
Mainland (nearshore waters)	Dampier Archipelago	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4	1	2	51	15	1
	Ningaloo Coast North/North WHA and South/South WHA	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					12		
	Ningaloo RUZ	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					12			
	Shark Bay Open Ocean Coast	✓	✓	✓	✓	✓	✓		✓					✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓					1			
	WA coastline	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4	1	3	51	15	



<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
Marine Order 30 (Prevention of Collisions) 2016, including: <ul style="list-style-type: none"> <li>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)</li> <li>adherence to navigation light display requirements, including visibility, light position/shape appropriate to activity</li> <li>adherence to navigation noise signals as required.</li> </ul>	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 <b>C 9.1</b>
Marine Order 21 (Safety and emergency arrangements) 2016, including: <ul style="list-style-type: none"> <li>adherence to minimum safe manning levels</li> <li>maintenance of navigation equipment in efficient working order (compass/radar)</li> <li>navigational systems and equipment required are those specified in Regulation 19 of Chapter V of SOLAS</li> <li>Automatic Identification System (AIS) that provides other users with information about the vessel's identity, type, position, course, speed, navigational status and other safety-related data.</li> </ul>	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 <b>C 9.2</b>
In the event of a spill, emergency response activities implemented in accordance with the OPEP (per Table 7-12).	F: Yes CS: Costs associated with implementing response strategies, vary dependant on nature and scale of spill	Potentially reduces consequence by implementing response to reduce impacts to the marine environment	Control based on regulatory requirement – must be adopted.	Yes <b>C 9.3</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
	event. Standard practice.			
Arrangements supporting the activities in the OPEP (per Table 7-12) will be tested to ensure the OPEP can be implemented as planned.	F: Yes. CS: Moderate costs associated with exercises. Standard practice.	No change to impact or risk however ensures OPEP can be implemented in the event of a hydrocarbon spill thereby potentially reducing the consequence.	Control based on regulatory requirement – must be adopted.	Yes <b>C 9.4</b>
Establishment of temporary exclusion zones around vessels which are communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of a collision with a third-party vessel.	Controls based on legislative requirements – must be adopted.	Yes <b>C 1.2</b>
<b>Good Practice</b>				
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 (excluding the PV); using a support vessel will provide only a small reduction in the likelihood of a collision with a third party vessel. The PV will have continual other vessels working alongside / in the vicinity which can act in a standby vessel capacity if needed.	Grossly disproportionate.	No
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 Operational Area will reduce the likelihood of a collision occurring.	Benefits outweigh cost/sacrifice.	Yes <b>C 9.5</b>
Notify AHO of activities and movements no less than 4 working weeks prior to scheduled activity commencement date.	F: Yes. CS: Minimal cost. Standard practice.	Notification of AHO will enable issuing of notices to mariners as required thereby reducing the likelihood of a collision with a third party vessel.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes <b>C 1.3</b>
Notify AMSA JRCC of activities and movements of	F: Yes.	Communication of the Petroleum Activities	Benefits outweigh cost/sacrifice.	Yes <b>C 1.5</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
the activity 24-48 hours before operations commence.	CS: Minimal cost. Standard practice.	Program to other marine users ensures they are informed and aware, thereby reducing the likelihood of a collision with a third party vessel occurring.	Control is also Standard Practice.	
<b>Mitigation: oil spill response</b>	Refer to Appendix D.			
<b>Professional Judgement – Eliminate</b>				
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
<b>Professional Judgement – Substitute</b>				
No additional controls identified.				
<b>Professional Judgement – Engineered Solutions</b>				
No additional controls identified.				
<b>ALARP Statement</b>				
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 2.4.2), Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned loss of hydrocarbon as a result of 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.				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5): <ul style="list-style-type: none"> <li>Overall risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>EPOs and controls in the Scarborough OPP that are relevant to an unplanned hydrocarbon release from a vessel collision have been adopted.</li> <li>There are no changes to internal/external context specific to this risk from the Scarborough OPP. Hydrocarbon spills were raised during stakeholder consultation (Appendix F, Table 1) and these were considered in the finalisation of the EP.                             <ul style="list-style-type: none"> <li>Following consultations with DNP on the potential risks to AMPs, the DNP noted it has no objections and claims at this time.</li> </ul> </li> </ul>
<b>Acceptability Statement:</b>
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 Major (corals). 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.

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 a loss of vessel structural integrity to a level that is acceptable if ALARP.

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<b>EPO 19</b> No release of hydrocarbons to the marine environment due to a vessel collision associated with the Petroleum Activities Program.	<b>C 9.1</b> Marine Order 30 – Prevention of collisions – 2016, including: <ul style="list-style-type: none"> <li>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)</li> <li>adherence to navigation light display requirements, including visibility, light position/shape appropriate to activity</li> <li>adherence to navigation noise signals as required.</li> </ul>	<b>PS 9.1</b> Vessels compliant with Marine Order 30 (Prevention of Collisions) 2016 (which requires vessels to be visible at all times) to prevent unplanned interaction with marine users.	<b>MC 9.1.1</b> Marine assurance inspection records demonstrate compliance with standard maritime safety procedures (Marine Orders 21 and 30).
	<b>C 9.2</b> Marine Order 21 (Safety and emergency arrangements) 2016, including: <ul style="list-style-type: none"> <li>adherence to minimum safe manning levels</li> <li>maintenance of navigation equipment in efficient working order (compass/radar)</li> <li>navigational systems and equipment required are those specified in Regulation 19 of Chapter V of SOLAS</li> <li>Automatic Identification System (AIS) that provides other users with</li> </ul>	<b>PS 9.2</b> Vessels compliant with Marine Order Marine Orders 21 (Safety and emergency arrangements) 2016 to prevent unplanned interaction with marine users.	

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	information about the vessel's identity, type, position, course, speed, navigational status and other safety-related data.		
	<b>C 9.3</b> In the event of a spill emergency response activities implemented in accordance with the OPEP (Table 7-12).	<b>PS 9.3</b> In the event of a spill the OPEP requirements are implemented.	<b>MC 9.3.1</b> Completed incident Documentation shows requirements of OPEP were implemented in the event of a spill.
	<b>C 9.4</b> Arrangements supporting the activities in the OPEP (Table 7-12) will be tested to ensure the OPEP can be implemented as planned.	<b>PS 9.4.1</b> Exercises/tests will be conducted in alignment with the frequency identified in Table 7-14.	<b>MC 9.4.1</b> Testing of arrangement records confirm that emergency response capability has been maintained.
		<b>PS 9.4.2</b> Woodside's procedure demonstrates a minimum level of trained personnel, for core roles in the OPEP are maintained.	<b>MC 9.4.2</b> Emergency Management dashboard confirms that minimum level of personnel trained for core OPEP roles are available.
	<b>C 1.2</b> See Section 6.7.1	<b>PS 1.2</b> See Section 6.7.1	<b>MC 1.2.1</b> See Section 6.7.1
			<b>MC 1.2.2</b> See Section 6.7.1
	<b>C 9.5</b> Develop SIMOPS management plan when working in vicinity of other Woodside operations / activities.	<b>PS 9.5</b> SIMOPS management plan is in place when working in vicinity of other Woodside operations / activities.	<b>MC 9.5.1</b> Records indicate a SIMOPS management plan has been created.
	<b>C 1.3</b> See Section 6.7.1	<b>PS 1.3</b> See Section 6.7.1	<b>MC 1.3.1</b> See Section 6.7.1
	<b>C 1.5</b> See Section 6.7.1	<b>PS 1.5</b> See Section 6.7.1	<b>MC 1.5.1</b> See Section 6.7.1
Detailed preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are present in Appendix D.			

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### 6.8.3 Unplanned Hydrocarbon Release – Bunkering

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.2.6 – Unplanned Hydrocarbon Release														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7			<b>Existing Environment</b> Physical Environment – Section 4.4 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
Loss of hydrocarbons to marine environment from bunkering/ refuelling			✓			✓		A	F	2	L	LC S GP PJ	Broadly Acceptable	EPO 20
Description of Source of Impact/Risk														
<p>Bunkering of marine diesel may occur within the Operational Area. Three credible scenarios for the loss of containment of marine diesel during bunkering operations have been identified:</p> <ul style="list-style-type: none"> <li>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).</li> <li>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 15 minutes at a maximum transfer rate of 220 m<sup>3</sup>/hr for the PV, resulting in approximately 55 m<sup>3</sup> (55,000L) marine diesel loss as to the deck and/or into the marine environment.</li> <li>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 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 &lt;100 L.</li> </ul> <p><b>Likelihood</b></p> <p>Woodside spill records indicates that while there have been smaller releases (&lt;30 L) associated with bunkering, there have been no recorded partial or total failures of bulk transfer hose or fittings during bunkering, combined with a failure in procedure to shut off fuel pumps for a period of up to five minutes, resulting in the worst case credible scenario of an 8 m<sup>3</sup> loss of diesel.</p> <p>International Tanker Owners Pollution Federation Limited (IOTPF) (2020) data reports that for tanker operations during 1970-2017, 7% of small (&lt;7 tonnes) spills occurred during bunkering and 2% of medium (7-700 tonnes) spills. Whilst this data is from the oil tanker industry it has been used as an indicator of potential for spills associated with bunkering activities. A risk assessment by AMSA of oil spills in Australian ports and waters (Det Norske Veritas, 2011) identifies transfer spills as a risk.</p> <p><b>Quantitative Spill Risk Assessment</b></p> <p>Exposure to threshold concentrations from a 55,000 L surface spill from bunkering activities would be well within the EMBA for the vessel collision scenario detailed in Section 6.8.2. Given this, the offshore location of the Operational</p>														

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Area, and the fact that the same hydrocarbon type is involved for both scenarios, specific modelling for an 55,000 L marine diesel release was not undertaken for this Petroleum Activities Program.

Given the physical and chemical similarities, and the relatively small credible spill volumes, marine diesel is considered to be a suitable substitute for aviation jet fuel for the purposes of this environmental risk assessment. Aviation jet fuel would behave similarly to diesel and have similar impacts and, considering small spill volumes likely to be contained on the helideck, this was not modelled.

**Hydrocarbon Characteristics**

Refer to Section 6.8.2 for a description of the characteristics of marine diesel, including detail on the predicted fate and weathering of a spill to the marine environment.

**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<sup>3</sup> (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, minor impacts to commercial fisheries may also occur.

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 negligible.

It is recognised that depending on the location and timing of a bunkering spill along the trunkline route there is variation in potential spatial and temporal environmental sensitivity. For example, the trunkline traverses a number of BIAs for marine species protected under the EPBC Act that may be seasonally present in the Operational Area, including migration BIAs for humpback whales and pygmy blue whales, a foraging BIA for whale sharks and breeding and nesting BIAs for marine turtles and seabirds. The trunkline route also traverses the Montebello Marine Park between KP 109 and KP 192. The North-west Marine Parks Network Management Plan (DNP, 2018a) lists the natural values of the Montebello AMP as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act, including overlapping BIAs. A bunkering spill may result in changes in marine fauna behaviour or injury/mortality may occur due to direct contact or a change in water quality leading to indirect impacts in the localised vicinity of the spill. As outlined in the ALARP evaluation below, refuelling of the PV in the Montebello Marine Park will be preferentially avoided. If refuelling in the Montebello Marine Park is able to be avoided, it removes the spill risk during bunkering and would reduce the consequence to more sensitive marine receptors, compared to other areas of the Petroleum Activities Program.

**Summary of Assessment Outcomes**

Receptor	Impact	Receptor Sensitivity	Consequence	Likelihood	Risk Rating
Water quality	Change in water quality	Low value (open water)	Negligible (F)	Unlikely	Low
Fish, sharks and rays	Change in fauna behaviour	High species value	Negligible (F)	Unlikely	Low
Marine mammals	Change in fauna behaviour	High species value (i.e. pygmy blue whale)	Negligible (F)	Unlikely	Low
Marine reptiles	Change in fauna behaviour	High species value (i.e. flatback, green and hawksbill turtles)	Negligible (F)	Unlikely	Low
	Injury/mortality to fauna		Negligible (F)	Unlikely	Low

**Overall Impact Significance Level/ Risk Consequence:** The overall impact significance level/risk rating for an unplanned hydrocarbon release resulting from a bunkering incident is Low based on a Negligible consequence to the most high value receptors (marine fauna). The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
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 <b>C 10.1</b>
<b>Good Practice</b>				
Bunkering equipment controls: <ul style="list-style-type: none"> <li>All hoses that have a potential environmental risk following damage or failure shall be linked to the vessel's preventative maintenance system.</li> <li>All bulk transfer hoses shall have current certification and be in good condition, and inspected as required.</li> <li>There shall be dry-break couplings and flotation on fuel hoses.</li> <li>There shall be an adequate number of appropriately stocked, located and maintained spill kits.</li> </ul>	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 <b>C 10.2</b>
Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: <ul style="list-style-type: none"> <li>Procedures and controls for bringing vessel alongside PV to prevent collision.</li> <li>Implement a completed PTW and/or JSA for the hydrocarbon bunkering operation.</li> <li>Visually monitor gauges, hoses, fittings</li> </ul>	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 <b>C 10.3</b>

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<p>and the sea surface during the operation.</p> <ul style="list-style-type: none"> <li>• Check hoses prior to commencement.</li> <li>• 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.</li> <li>• Do not transfer hydrocarbons in marginal weather conditions.</li> </ul>				
<b>Mitigation: oil spill response</b>	Refer to Appendix D.			
<b>Professional Judgement – Eliminate</b>				
Preferentially avoid refuelling PV in the Montebello Marine Park	<p>F: Yes, however cannot rule out refuelling in the marine park altogether due to Trunkline length in the marine park, fuel capacity and unknowns around fuel consumption (i.e. due to sea state and lay conditions at the time)</p> <p>CS: Schedule implications on timing refuelling to ensure enough fuel stored on board to get through activities in the marine park.</p>	If able to avoid refuelling in the Montebello Marine Park, removes spill risk during bunkering activity which can reduce consequence potential to more sensitive marine receptors, compared to other areas of the Petroleum Activities Program	Benefits outweigh cost/sacrifice.	Yes <b>C 10.4</b>
Vessels (PV excepted) to avoid refuelling in the Montebello Marine Park	<p>F: Yes</p> <p>CS: Schedule implications on timing refuelling if required to travel outside of the Marine Park</p>	By avoiding refuelling in the Montebello Marine Park, removes spill risk during bunkering activity which can reduce consequence potential to more sensitive marine receptors, compared to other areas of the Petroleum Activities Program	Benefits outweigh cost/sacrifice.	Yes <b>C 10.5</b>
Bring all vessels to port to refuel	<p>F: No.</p> <p>PV would be required to laydown the Trunkline to transit which significantly compromises Trunkline integrity and adds to installation time in the field.</p>	Eliminates the bunkering risk in the Operational Area, However, moves risk to another location. Therefore, no overall benefit.	Disproportionate. The cost/ sacrifice outweighs the benefit gained.	No

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	<p>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.</p> <p>CS: Significant due to schedule delay, Trunkline integrity and vessel transit costs / risks, increased emissions and day rates.</p>			
<b>Professional Judgement – Substitute</b>				
No additional controls identified.				
<b>Professional Judgement – Engineered Solutions</b>				
No additional controls identified.				
<p><b>ALARP Statement:</b></p> <p>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 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.</p>				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
<p>The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5):</p> <ul style="list-style-type: none"> <li>• Overall risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>• EPOs and controls in the Scarborough OPP that are relevant to an unplanned hydrocarbon release from bunkering have been adopted.</li> <li>• There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.</li> </ul>
<p><b>Acceptability Statement:</b></p> <p>The impact assessment has determined that accidental discharge of hydrocarbons from bunkering represents a low current risk rating and is unlikely to result in a risk consequence greater than Negligible. BIAs for 20 EPBC Act listed Threatened or Migratory species overlap the Operational Area or EMBA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. The 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.</p> <p>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 of a loss of hydrocarbons during bunkering / refuelling to a level that is broadly acceptable.</p>

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<b>EPO 20</b>	<b>C 10.1</b>	<b>PS 10.1</b>	<b>MC 10.1.1</b>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
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.	Marine Order 91 (marine pollution prevention – oil) 2014, requires SOPEP / SMPEP (as appropriate to vessel class).	Appropriate initial responses prearranged and exercised for response to a hydrocarbon spill, as appropriate to vessel class in compliance with Marine Order 91 (marine pollution prevention – oil) 2014, requires SOPEP / SMPEP (as appropriate to vessel class).	Marine Assurance inspection records demonstrate compliance with Marine Order 91.
	<b>C 10.2</b> Bunkering equipment controls: <ul style="list-style-type: none"> <li>All hoses that have a potential environmental risk following damage or failure shall be linked to the vessel’s preventative maintenance system.</li> <li>All bulk transfer hoses shall have current certification and be in good condition and inspected as required.</li> <li>There shall be dry-break couplings and flotation on fuel hoses.</li> <li>There shall be an adequate number of appropriately stocked, located and maintained spill kits.</li> </ul>	<b>PS 10.2.1</b> Bunkering equipment will be put on the vessels preventative maintenance system to ensure damaged equipment is replaced prior to failure.	<b>MC 10.2.1</b> Records confirm the vessels bunkering equipment is subject to systematic integrity checks.
		<b>PS 10.2.2</b> All diesel transfer hoses to have dry break couplings and pressure rating suitable for intended use.	<b>MC 10.2.2</b> Records confirm presence of dry break of couplings and flotation on fuel hoses.
		<b>PS 10.2.3</b> Adequate resources are available to allow implementation of SOPEP.	<b>MC 10.2.3</b> Records confirm presence of spill kits or other resources as required by SOPEP.
<b>C 10.3</b> Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: <ul style="list-style-type: none"> <li>Procedures and controls for bringing bunkering vessel alongside to prevent collision.</li> <li>Implement a completed PTW and/or JSA for the hydrocarbon bunkering operation.</li> <li>Visually monitor gauges, hoses, fittings and the sea surface during the operation.</li> <li>Check hoses prior to commencement.</li> <li>Commence bunkering/refuelling in daylight hours. If the transfer is to continue into</li> </ul>	<b>PS 10.3</b> Compliance with Contractor procedures for management of bunkering/refuelling operations.	<b>MC 10.3.1</b> Records demonstrate bunkering/refuelling undertaken in accordance with Contractor bunkering procedures.	

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	<p>darkness, the JSA risk assessment must consider lighting and the ability to determine if a spill has occurred.</p> <ul style="list-style-type: none"> <li>Do not transfer hydrocarbons in marginal weather conditions.</li> </ul>		
	<p><b>C 10.4</b> Preferentially avoid refuelling PV in the Montebello Marine Park.</p>	<p><b>PS 10.4</b> Refuelling the PV to preferentially avoid the Montebello Marine Park</p>	<p><b>MC 10.4.1</b> Records demonstrate bunkering/refuelling planning for PV has assessed and prioritised avoidance of Montebello Marine Park where possible</p>
	<p><b>C 10.5</b> Vessels (PV excepted) to avoid refuelling in the Montebello Marine Park</p>	<p><b>PS 10.5</b> No Petroleum Activities Program vessels (PV excepted) to be refuelled in the Montebello Marine Park</p>	<p><b>MC 10.5.1</b> Records demonstrate refuelling of vessels carried out outside of the Montebello Marine Park</p>
<p>Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are presented in Appendix D.</p>			

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### 6.8.4 Unplanned Discharge – Deck and Subsea Spills

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.2.1 – Unplanned Discharge: Chemicals														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7 ROV Operations – Section 3.8.3			<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Habitats and Biological Communities – Section 4.5				<b>Stakeholder consultation</b> 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 ROV hydraulic leaks			✓			✓		A	E	1	L	LC SGP PJ	Broadly Acceptable	EPO 3
Description of Source of Impact/Risk														
<p><b>Vessel Operations</b></p> <p>Hydrocarbons/chemicals are used during vessel and ROV activities for a variety of purposes within the Operational Area. Spills may include:</p> <ul style="list-style-type: none"> <li>Chemicals (maintenance and cleaning chemicals). Generally held onboard in low quantities (typically &lt;50 L containers). 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 50 L.</li> <li>Hydraulic fluids used in machinery (including cranes, winches, ROVs, TSHD drag head, pipelay stinger). Unplanned discharges are predominantly due to failure of hydraulic hoses or 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<sup>3</sup>. Operational experience demonstrates that spills are most likely to originate from hydraulic hoses and have been less than 100 L, with a typical volume of &lt;20 L (based on capacity of hydraulic hose). All equipment is subject to planned maintenance as preventative measures against unplanned spills.</li> </ul> <p><b>Survey Equipment</b></p> <p>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, synthetic hydrocarbon filled tubing. The hydrophone cable has the potential to be punctured, resulting a leakage of fluid for a variety of reasons, including damage during deployment or retrieval.</p>														

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Detailed Impact Assessment
<p><b>Assessment of Potential Impacts</b></p> <p><b>Water Quality</b></p> <p>Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (&lt;20 L) are anticipated, resulting in very short-term impacts to water quality, and limited to the immediate release location.</p> <p>The open water location and relatively small unplanned volumes of hydrocarbons/chemicals released will result in rapid dilution close to the source of discharge.</p> <p>Given the occasional nature of unplanned deck and subsea discharges, the small volumes, and the offshore location of the Operational Area, any changes to water quality are expected to have no lasting effects.</p> <p><b>Marine Fauna</b></p> <p>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. 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.</p>

Summary of Assessment Outcomes					
Receptor	Impact	Receptor Sensitivity	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
<p><b>Overall Risk Consequence:</b> 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.</p>					

Demonstration of ALARP				
Control Considered	Control Feasibility (F) and Cost/Sacrifice (CS)	Benefit in Impact/Risk Reduction	Proportionality	Control Adopted
<b>Legislation, Codes and Standards</b>				
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	Controls based on legislative requirements – must be adopted.	Yes <b>C 10.1</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
		result, the overall risk is reduced.		
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 <b>C 11.1</b>
<b>Good Practice</b>				
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 <b>C 11.2</b>
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 <b>C 11.3</b>
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 <b>C 7.4</b>
<b>Mitigation: oil spill response</b>	Refer to Appendix D.			
<b>Professional Judgement – Eliminate</b>				
No additional controls identified.				

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Professional Judgement – Substitute</b>				
No additional controls identified.				
<b>Professional Judgement – Engineered Solutions</b>				
Below-deck storage of hydrocarbons and chemicals where practicable.	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 <b>C 11.4</b>
A reduction in the volumes of chemicals and hydrocarbons stored onboard vessels.	F: Yes. CS: Project delays if required chemicals not on board. Increases the risks associated with transportation and lifting operations.	No reduction in likelihood or consequence since chemicals will still be required to enable activities to occur.	Disproportionate. The cost/ sacrifice outweighs the benefit gained.	No
<b>ALARP Statement:</b> 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 risks and consequences of an unplanned deck and subsea spills. 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.				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5): <ul style="list-style-type: none"> <li>• Overall risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>• EPOs and controls in the Scarborough OPP that are relevant to an unplanned deck or subsea spill have been adopted.</li> <li>• There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.</li> </ul>
<b>Acceptability Statement:</b> The impact assessment has determined that unplanned deck and subsea spills represents a low current risk rating and is unlikely to result in a risk consequence greater than Slight. A number of BIAs for EPBC Act listed Threatened or Migratory species overlap the Operational Area (refer to Section 4.6). 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

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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.

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<b>EPO 3</b> 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.	<b>C 10.1</b> See Section 6.8.3	<b>PS 10.1</b> See Section 6.8.3	<b>MC 10.1.1</b> See Section 6.8.3
	<b>C 11.1</b> Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	<b>PS 11.1</b> Failure of primary containment in storage areas does not result in loss to the marine environment.	<b>MC 11.1.1</b> Inspection confirms liquid chemicals and fuel are stored in bunded/secondarily contained areas.
	<b>C 11.2</b> Spill kits positioned in high risk locations around the vessel (near potential spill points such as transfer stations).	<b>PS 11.2</b> Spill kits available for use to clean up deck spills.	<b>MC 11.2.1</b> Records confirms that spill kits are present, maintained, and suitably stocked.
	<b>C 11.3</b> Implementation of waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of all waste generated.	<b>PS 11.3</b> Hazardous and non hazardous waste managed in accordance with the waste management procedure.	<b>MC 11.3.1</b> Records demonstrate compliance with waste management procedure.
	<b>C 7.4</b> See Section 6.7.7	<b>PS 7.4</b> See Section 6.7.7	<b>MC 7.4.1</b> See Section 6.7.7
	<b>C 11.4</b> Below-deck storage of hydrocarbons and chemicals where practicable.	<b>PS 11.4</b> Hydrocarbons and chemicals stored below-deck where practicable.	<b>MC 11.4.1</b> Inspections show storage where practicable of hydrocarbons and chemicals below deck

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**Seabirds and Migratory Shorebirds, Fish, Marine Reptiles and Marine Mammals**

**Injury/Mortality to Fauna**

The unplanned discharge of solid wastes can result in injury or mortality to fauna, either through contamination or physical injury depending on the nature of the waste. 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 (Commonwealth of Australia, 2018). The Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia’s coasts and oceans (Commonwealth of Australia, 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. Commonwealth of Australia, 2018; Commonwealth of Australia, 2017a) and ingested causing damage to internal tissues and potentially preventing feeding activities. In the worst instance this could have a lethal affect to an individual. Marine debris has been identified as threat in the Recovery Plan for Marine Turtles in Australia (2017–2027).

Impacts to species including fish, birds, marine mammals and marine reptiles from the unplanned discharge of solid waste is unlikely given low occurrence of unplanned discharges. Significant impacts are unlikely to occur at an individual level and will not occur at a population level, nor result in the decrease of the quality of the habitat such that the extent of these species is likely to decline.

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, 2009), 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
Fish, sharks and rays	Injury/mortality to marine fauna	High value species (e.g. whale shark)	Minor (D)	Remote	Low
Marine mammals		High value species (e.g. pygmy blue whale)	Minor (D)	Remote	Low
Marine reptiles		High values species (e.g. flatback, green and hawksbill turtle)	Minor (D)	Remote	Low
Seabirds and migratory shorebirds		High value species	Minor (D)	Remote	Low

**Overall Risk Consequence:** The overall risk consequence/risk rating for unplanned discharge of waste is Low based on a Minor consequence to the high value receptors (marine fauna). The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.

**Demonstration of ALARP**

Control Considered	Control Feasibility (F) and Cost/Sacrifice (CS)	Benefit in Impact/Risk Reduction	Proportionality	Control Adopted
<b>Legislation, Codes and Standards</b>				
Marine Order 95 – Pollution prevention – Garbage (as	F: Yes.	Legislative requirements to be	Controls based on legislative	Yes

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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.	CS: Minimal cost. Standard practice.	followed reduce the likelihood of an unplanned release. The consequence is unchanged.	requirements – must be adopted.	<b>C 7.1</b>
<b>Good Practice</b>				
<p>Marine Order 94 – Packaged harmful substances, which requires:</p> <ul style="list-style-type: none"> <li>Vessels carrying harmful substances in packaged form must comply with 2 to 5 of MARPOL Annex III, with respect to stowage requirements.</li> <li>A vessel Master may only wash a substance overboard if: <ul style="list-style-type: none"> <li>the physical, chemical and biological properties of the substance have been considered, and</li> <li>washing overboard is considered the most appropriate manner of disposal, and</li> <li>the Vessel Master has authorised the washing overboard.</li> </ul> </li> </ul>	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 <b>C 12.1</b>
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.	Benefit outweighs cost sacrifice.	Yes <b>C 11.3</b>
<p>Vessel ROV, crane or support vessel may be used to attempt recovery of hazardous solid wastes lost overboard.</p> <p>Where safe and practicable for this activity will consider:</p> <ul style="list-style-type: none"> <li>risk to personnel to retrieve object</li> <li>whether the location of the object is in</li> </ul>	F: Yes. CS: Minimal cost. Standard practice.	Occurs after an unplanned release of solid waste and therefore no change to the likelihood. Since the waste objects may be recovered, a reduction in consequence is possible.	Benefit outweighs cost sacrifice.	Yes <b>C 12.2</b>

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recoverable water depths <ul style="list-style-type: none"> <li>object's proximity to subsea infrastructure</li> <li>ability to recover the object (i.e., nature of object, lifting equipment or, ROV availability and suitable weather).</li> </ul>			
<b>Professional Judgement – Eliminate</b>			
No additional controls identified.			
<b>Professional Judgement – Substitute</b>			
No additional controls identified.			
<b>Professional Judgement – Engineered Solutions</b>			
No additional controls identified.			
<b>ALARP Statement:</b>			
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 risks and consequences of unplanned discharge of waste. 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.			

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5): <ul style="list-style-type: none"> <li>Overall risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>EPOs and controls in the Scarborough OPP that are relevant to an unplanned release of hazardous and non-hazardous wastes have been adopted.</li> <li>There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.</li> </ul>
<b>Acceptability Statement:</b>
The impact assessment has determined that unplanned discharges from a release of solid hazardous and non-hazardous wastes represents a low current risk rating and is unlikely to result in a risk consequence greater than Minor. A number of BIAs for EPBC Act listed Threatened or Migratory species overlap the Operational Area. 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. 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 hazardous and non-hazardous solid waste / equipment to a level that is broadly acceptable.

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<b>EPO 3</b> Undertake the Petroleum Activities Program in a	<b>C 7.1</b> See Section 6.7.7	<b>PS 7.1</b> See Section 6.7.7	<b>MC 7.1.1</b> See Section 6.7.7
	<b>C 12.1</b>	<b>PS 12.1</b>	<b>MC 12.1.1</b>
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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p>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.</p> <p><b>EPO 6</b> 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.</p> <p><b>EPO 10</b> 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.</p> <p><b>EPO 11</b> 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.</p> <p><b>EPO 12</b> 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.</p> <p><b>EPO 15</b> Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fish, marine mammals, marine reptiles, or the spatial distribution of a population.</p> <p><b>EPO 21</b> Undertake Petroleum Activities Program in a</p>	<p>Marine Order 94 (where relevant to vessel class) – packaged harmful substances, which requires:</p> <ul style="list-style-type: none"> <li>• vessels carrying harmful substances in packaged form must comply with 2 to 5 of MARPOL Annex III, with respect to stowage requirements</li> <li>• a Vessel Master may only wash a substance overboard if: <ul style="list-style-type: none"> <li>– the physical, chemical and biological properties of the substance have been considered, and</li> <li>– washing overboard is considered the most appropriate manner of disposal, and</li> <li>– the Vessel Master has authorised the washing overboard.</li> </ul> </li> </ul>	<p>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.</p>	<p>Records demonstrate any non-compliance with Marine Orders are documented.</p>
	<p><b>C 11.3</b> See Section 6.8.4</p>	<p><b>PS 11.3</b> See Section 6.8.4</p>	<p><b>MC 11.3.1</b> See Section 6.8.4</p>
	<p><b>C 12.2</b> Vessel ROV, crane or support vessel may be used to attempt recovery of solid wastes / equipment lost overboard.</p> <p>Where safe and practicable for this activity will consider:</p> <ul style="list-style-type: none"> <li>• risk to personnel to retrieve object</li> <li>• whether the location of the object is in recoverable water depths</li> <li>• object's proximity to subsea infrastructure</li> <li>• ability to recover the object (i.e., nature of object, lifting</li> </ul>	<p><b>PS 12.2</b> Any solid waste / equipment dropped to the marine environment will be recovered where safe and practicable to do so.</p>	<p><b>MC 12.2.1</b> Records detail the recovery attempt consideration and status of any waste / equipment lost to marine environment.</p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p>manner that will prevent an unplanned release of solid waste to the marine environment resulting in a significant impact.</p> <p><b>EPO 22</b> 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.</p> <p><b>EPO 23</b> 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.</p>	<p>equipment or, ROV availability and suitable weather).</p>		

### 6.8.6 Physical Presence (Unplanned) – Seabed Disturbance

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.2.3 – Physical Presence (Unplanned): Seabed Disturbance														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7 Seabed Intervention Activities – Section 3.9 Trunkline Installation Activities – Section 3.11			<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Physical Environment – Section 4.4 Habitats and Biological Communities – Section 4.5					<b>Stakeholder consultation</b> 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
Unplanned disturbance to seabed from trenching, spoil disposal and backfill activities outside designated areas		✓	✓		✓		✓	A	D	2	M	LCS GP PJ	Broadly Acceptable	EPO 6,17,24, 31
Dredging outside of Offshore Borrow Ground Project Area		✓	✓		✓		✓	A	D	2	M			
Dropped objects resulting in the disturbance of benthic habitat		✓	✓		✓		✓	A	F	2	L			
Placement of rock berms, span correction or other seabed intervention works outside of design footprint		✓	✓		✓		✓	A	D	2	M			
Unplanned seabed disturbance during continental slope preparation.		✓	✓		✓		✓	A	D	2	M			
Anchoring of SWLB outside of predetermined safe zones		✓	✓		✓		✓	A	D	2	M			
Contingent activities such as Trunkline abandonment and temporary mooring		✓	✓		✓		✓	A	E	2	M			

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**Description of Source of Impact/Risk**

**Seabed Disturbance outside the Designated Area**

- Trunkline trenching, spoil disposal and backfill activities may occur outside of the designated area as a result of operator error, equipment failure, unplanned movement of the seabed, adverse weather conditions or sea states and in the event of contingency activities.
- Dredging outside Offshore Borrow Ground Project Area may occur as a result of operator error, adverse weather conditions or sea states.
- Rock berm placement, span rectification and other seabed intervention activities may occur outside of the designated project footprint, as a result of operator error, adverse weather conditions or sea states.
- Unplanned seabed disturbance during continental slope preparation and excavation activities could result from turbid flow due to the mobile nature of the seabed soft sediments, coupled with the slope angle.
- Anchoring of SWLB outside predetermined safe zones may occur outside of the designated area as a result of operator error, adverse weather conditions or sea states.
- Contingent Trunkline installation activities: The trunkline may need to be abandoned and retrieved multiple times throughout installation as a result of adverse sea states, cyclones, or mechanical issues with pipelay (Section 3.13.3). Abandonment must occur within a straight line, therefore if abandonment occurs at a bend in the trunkline route, lay-down on the seabed may occur outside of the expected trunkline footprint. The catenary of trunkline to be abandoned is nominally 2.5 times the water depth. The trunkline will be retrieved and thus impacts to the seafloor will be temporary in nature.

**Dropped Objects**

There is the potential for objects to be dropped overboard from 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) and hardware fixtures; however, there is also potential for larger equipment to also be dropped during the activity. The spatial extent in which dropped objects can occur is restricted to the Operational Area.

While the PV is installing the Trunkline over existing pipelines (third party infrastructure) via. pre-installed rock berm crossings, there is a risk (low likelihood) for dropped lengths of pipe during lined pipe transfer activities, which may damage or rupture existing pipelines. There is also a very low likelihood risk that the catenary may be dropped while in the vicinity of third-party assets.

**Temporary mooring**

In the event of a contingency activity (Section 3.13) the PV may be required to temporarily moor on location via anchor. The expected footprint of seabed disturbance due to setting the anchor is minimal, due to activity being short term. Impacts are likely to be constrained to the area and temporary. Typically, the PV uses DP to remain in location.

**Detailed Impact Assessment**

**Assessment of Potential Impacts**

It is expected that any unplanned seabed disturbance would be within the 12.9 km<sup>2</sup> seabed disturbance calculation, as defined within the Scarborough OPP (SA0006AF0000002, Rev 5), based on an average 30 m trunkline disturbance corridor, along the length of the trunkline (430 km).

**Water and Sediment quality**

Water quality change occurs when seabed sediments enter the water column (turbidity). Turbidity may occur during any activity which requires contact with, or occurs in close proximity to, the seabed. After a period, the suspended sediments settle and the turbidity in the water column returns to pre-disturbance levels. Sediment sampling along the proposed pipeline route has demonstrated that sediments are suitable for unconfined ocean disposal with results indicating that all levels of potential contaminants of concern were below the NAGD (2009) screening levels. Therefore, sediments to be dredged (and suspended during operations) are considered to be uncontaminated and thus no toxicological impacts to water and sediment from the resuspension of contaminants are predicted.

Impacts from unplanned seabed disturbance outside the designated area on water and sediment quality will be slight. Receptor sensitivity of water quality is low (low value, open water), and impacts are expected to be localised.

**Epifauna and Infauna**

The seafloor within the region is understood to comprise of soft sediments for the majority, with the presence of a rock pinnacle field at 300 m depth. The pinnacles are isolated forms, approximately 360 m south of the trunkline at KP206, and do not constitute a continuous reef, however provide habitat for a diverse range of epifaunal and demersal species that commonly occur across the NWMR, as well as a low density of soft corals on top. Epifauna and benthic habitats are likely to be sparse, comprising of ascidians, sponges, invertebrate communities and octocorals representative of the

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wider region, as well as larger motile organisms (demersal fish, shrimp, sea cucumbers etc.) and infauna (i.e. polychaetes) (Section 4.5). These communities are well represented through the region, and any impacts are likely to be at a localised proportion of communities (Keesing, 2019; Advisian, 2019a).

The proposed trunkline route avoids areas of potentially high diversity, relative to the surrounding area such as the rock pinnacles. However, should seabed disturbance occur outside of the designated area as a result of trunkline abandonment or incorrect trunkline installation or dredging, backfill activities or spoil disposal, there may be a localised impact on benthic communities that may occur within the wider Operational Area. Dropped objects and temporary mooring can disturb the seabed, resulting in habitat change and alter communities. If not recovered due to health and safety, operational constraints or other factors, dropped objects may result in a small permanent loss of habitat under the object. In most cases, these objects will be able to be recovered and the impacts will be temporary in nature.

#### **KEFs**

Three KEFs overlap the Trunkline Project Area; the Exmouth Plateau, Ancient Coastline at 125 m Depth and Continental Slope Demersal Fish Community. Unplanned disturbance may lead to localised and temporary change in habitat and subsequent localised impact on benthic communities.

The Trunkline Project Area enters the Exmouth Plateau KEF about 240 km offshore (Figure 4-15) within water depths of about 1100 m, extending about 60 km into the KEF. The Ancient Coastline at 125 m Depth KEF overlaps the Trunkline Project Area, located about 360 km offshore (Figure 4-15), north-north-west of the Montebello Islands. Trunkline trenching, backfill and slope crossing excavation will not occur in these KEFs; any unplanned seabed disturbance will be restricted to the small footprint of an object potentially dropped and will be highly localised. Impact will not occur to the hard substrates of the KEF. Physical habitat modification is not listed as a potential concern for this KEF.

The Continental Slope Demersal Fish Community is recognised as a KEF because of its biodiversity values, including high levels of endemism (DAWE, 2020). The Trunkline Project Area intersects a small portion of the KEF (Figure 4-15), across one of its thinnest points throughout its distribution. Physical habitat modification is listed as a potential concern for this KEF (DAWE, 2020). Trunkline trenching, backfill and slope crossing excavation will not occur in this KEF, any potential impact to the KEF from unplanned habitat disturbance is restricted to the footprint of a dropped object and will be highly localised.

#### **AMPs**

The offshore borrow ground dredging will occur adjacent to the Dampier Marine Park. A planned 250 m buffer is in place, as described in Section 6.7.2. Should dredging occur outside of the designated areas it is not anticipated to be at a significant distance and impacts will remain within this buffer zone (i.e. seabed disturbance will not be within the Dampier Marine Park or outside of the modelled impact area (Section 6.7.2)). Elevated suspended sediment concentrations (SSCs) and hence detectable changes in water quality may occur within the Dampier Marine Park, however this will be temporary and not expected to modify, destroy, fragment, isolate or disturb an important or substantial area of habitat.

The Trunkline Project Area intersects the Montebello Marine Park between KP 109 to KP191 and within this area span rectification for three infrastructure crossings will occur. There is the potential for these activities to occur outside of their designated areas. Dominant benthic organisms recorded within the section of the Trunkline Project Area intersecting the Marine Park have included a wide variety of sponges and soft corals including whips and gorgonians, hydroids, seapens and crinoids (Advisian, 2019a), however these are typical of the benthos found both within the Marine Park (Advisian, 2019a) and regionally (Keesing, 2019). The footprint of free span rectification is extremely small in comparison with the spatial extent of these communities in the north western section of the Montebello Marine Park, the any unplanned seabed disturbance will not destroy, fragment, isolate these communities.

Unplanned seabed disturbance, should it increase suspended sediment concentrations within the Montebello Marine Park, does have the potential to indirectly affect filter feeder-sponge habitat. However, a minor temporary increase in suspended sediments at the seabed associated with an unplanned seabed disturbance within the Montebello Marine Park would not reach the intensity and duration terms of the impact thresholds, as discussed in Section 6.7.2 and thus no impacts are predicted beyond the direct footprint.

<b>Summary of Assessment Outcomes</b>					
<b>Receptor</b>	<b>Impact</b>	<b>Receptor Sensitivity</b>	<b>Consequence</b>	<b>Likelihood</b>	<b>Risk Rating</b>
Water quality	Change in water quality	Low value	Negligible (F)	Highly Unlikely	Low
Sediment quality	Change in sediment quality	Low value	Negligible (F)	Highly Unlikely	Low
Epifauna and infauna	Change in habitat Injury/mortality to marine fauna	Low value	Negligible (F)	Highly Unlikely	Low
KEFs	Change in habitat	High Value	Minor (D)	Highly Unlikely	Moderate
AMPs	Change in habitat	High Value	Minor (D)	Highly Unlikely	Moderate

**Overall Risk Consequence:** The overall risk consequence/risk rating for unplanned seabed disturbance is Moderate based on a Minor consequence to the high value receptors (KEFs, AMPs). The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
No additional controls identified.				
<b>Good Practice</b>				
A 250 m buffer zone will be implemented between the offshore borrow ground and the Dampier AMP.	F: Yes. The implementation of the buffer is feasible whilst ensuring there is enough sand available for the backfill activities. Increasing the buffer may limit the sand available for backfill resulting in the use of an additional borrow ground. CS: Minimal sacrifice	This control would reduce the risk of potential direct disturbance with the Dampier Marine Park.	The control would significantly reduce the risk of direct disturbance within the Dampier Marine Park	Yes <b>C 2.3</b>
The vessels work procedures for lifts, bulk transfers and cargo loading, which require: <ul style="list-style-type: none"> <li>The security of loads shall be checked prior to commencing lifts.</li> <li>Loads shall be covered if there is a</li> </ul>	F: Yes. CS: Minimal cost. Standard practice.	By ensuring there are appropriate work procedures in place, the likelihood of a dropped object is reduced. No change to consequence will occur.	Benefits outweigh cost/sacrifice.	Yes <b>C 13.1</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<p>risk of loss of loose materials.</p> <ul style="list-style-type: none"> <li>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.</li> </ul>				
Vessel inductions include awareness for crew in dropped object prevention.	F: Yes. CS: Minimal cost. Standard practice.	By ensuring crew are appropriately inducted in dropped object prevention, the likelihood of a dropped object event is reduced. No change in consequence will occur.	Benefits outweigh cost/sacrifice.	Yes <b>C 13.2</b>
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. CS: Costs associated with improved accuracy/tolerance for implementation	Positioning infrastructure within the design footprint will reduce the potential magnitude of impact.	Benefits outweigh cost/sacrifice	Yes <b>C 3.1</b>
Dropped objects to be recovered and relocated where safe and practicable to do so.	F: May not always be possible. Assessed case by case. CS: Potentially significant cost. Standard practice.	Occurs after a dropped object event; therefore, no change to the likelihood. Since the object may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	Yes <b>C 13.3</b>
Comply with in force Sea Dumping Permit (No. SD2019/3982 or amended), which includes the following: <ul style="list-style-type: none"> <li>Contractor must only dump within the disposal site.</li> <li>Contractor must ensure the dredged material is dumped in a manner over the disposal site to minimise mounding</li> </ul>	F: Yes CS: Significant costs associated with the studies and development of a sea dumping permit.	Implementation of the control provides regulation of sea dumping and includes an impact assessment to ensure environmental impact is minimised.	Control based on legislative requirements – must be adopted.	Yes <b>C 2.1</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<p>from dumping activities.</p> <ul style="list-style-type: none"> <li>Contractor must establish by GPS that, prior to dumping, the vessel is within the disposal site.</li> </ul>				
Designated 'No dredge' out of zone alarms will be in use on the dredging vessel navigation system.	F: Yes. CS: Minimal cost. Standard practice.	Use of out of zone alarms will reduce the likelihood of seabed disturbance outside designated areas. No change in consequence will occur.	Benefits outweigh cost/sacrifice.	Yes <b>C 13.4</b>
The trunkline touchdown point will be monitored during operations to ensure the trunkline is installed correctly.	F: Yes. CS: Minimal cost. Standard practice.	Monitoring of the touchdown point will ensure the trunkline is installed in the correct position and does not result in seabed disturbance outside the defined trunkline corridor.	Benefits outweigh cost/sacrifice.	Yes <b>C 13.5</b>
Appropriate approval obtained from third party asset owner prior to crossing installation or Trunkline installation activities being carried out in proximity to asset	F: Yes. CS: Minimal cost. Standard practice.	Ensures that activities are properly planned, risk assessed, controlled, co-ordinated, and safely executed	Benefits outweigh cost/sacrifice	Yes <b>C13.7</b>
Concurrent activities between contractor vessels and third-party asset owner during rock crossing installation or Trunkline installation activities will be managed with SIMOPS planning	F: Yes. CS: Minimal cost. Standard practice.	SIMOPS Plan contains detail such as communications requirements, exclusion zones and entry/exit requirements and roles and responsibilities to reduce the potential for interactions resulting in dropped objects.	Benefits outweigh cost/sacrifice	Yes <b>C 13.8</b>
Development of third party asset crossing installation procedure(s) to include damage prevention measures such as: <ul style="list-style-type: none"> <li>Real time monitoring during rock placement so bridge can see live</li> </ul>	F: Yes. CS: Minimal cost. Standard practice.	Ensures that activities are properly planned, controlled, co-ordinated, and safely executed to limit the likelihood of dropped objects.	Benefits outweigh cost/sacrifice	Yes <b>C 13.9</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
multibeam data and no-rock zones <ul style="list-style-type: none"> <li>Installation weather limitations if required</li> </ul>				
<b>Professional Judgement – Eliminate</b>				
Different rigging designs will be assessed to reduce likelihood of dropped pipe from issues such as sling slippage and will consider the use of spreader bars	F: Yes. CS: Monetary cost of system design and installation.	Use of rigging can reduce the likelihood of sling slippage and as a result, dropped pipes	Benefits outweigh cost/sacrifice.	Yes <b>C 13.6</b>
Third party asset crossings - rock sizing to be designed to not rupture hydrocarbon containing facilities should a mis-dump occur.	F: Yes CS: Minimal cost. Good Practice.	Reducing rock sizing to that which will not rupture existing third party pipelines eliminates the risk of pipeline rupture from rock mis-dumping	Benefits outweigh cost/sacrifice.	Yes. Adopted in current design.
Lifting activities between vessels to be carried out in accordance with requirements of third-party crossing agreement / permitting including implementation of lifting exclusion zone(s).	F: Yes. CS: Minimal cost. Standard practice.	By lifting pipe away from the existing third party infrastructure there is no potential for a dropped pipe to damage existing third party infrastructure.	Benefits outweigh cost/sacrifice.	Yes <b>C 13.10</b>
<b>Professional Judgement – Substitute</b>				
No additional controls identified.				
<b>Professional Judgement – Engineered Solutions</b>				
No additional controls identified.				
<b>ALARP Statement:</b> 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 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.				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5): <ul style="list-style-type: none"> <li>Overall risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>EPOs and controls in the Scarborough OPP that are relevant to an unplanned seabed disturbance have been adopted.</li> <li>There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.</li> </ul>
<b>Acceptability Statement:</b>

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The impact assessment has determined that disturbance to seabed from dropped objects or seabed disturbance outside the designated area represents a moderate current risk rating and is unlikely to result in a risk consequence greater than Minor. The adopted controls are considered consistent with industry good practice and professional judgement.

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 unplanned seabed disturbance to a level that is broadly acceptable.

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<b>EPO 6</b> 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.	<b>C 2.3</b> See Section 6.7.2	<b>PS 2.3</b> See Section 6.7.2	<b>MC 2.3.1</b> See Section 6.7.2
	<b>C 13.1</b> The vessels work procedures for lifts, bulk transfers and cargo loading, which require: <ul style="list-style-type: none"> <li>the security of loads shall be checked prior to commencing lifts</li> <li>loads shall be covered if there is a risk of loss of loose materials.</li> <li>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.</li> </ul>	<b>PS 13.1</b> All lifts conducted in accordance with applicable vessels work procedures to limit potential for dropped objects.	<b>MC 13.1.1</b> Records show lifts conducted in accordance with the applicable vessel work procedures.
<b>EPO 17</b> 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.			
<b>EPO 24</b> Undertake the Petroleum Activities Program in a manner which prevents unplanned seabed disturbance.	<b>C 13.2</b> Vessel inductions include awareness for crew in dropped object prevention.	<b>PS 13.2</b> Dropped object prevention awareness is provided to the vessel crew.	<b>MC 13.2.1</b> Records show dropped object prevention awareness is provided to the vessel crew.
<b>EPO 31</b> No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit <sup>35</sup> .	<b>C 3.1</b> See Section 6.7.3	<b>PS 3.1</b> See Section 6.7.3	<b>MC 3.1.1</b> See Section 6.7.3
	<b>C 13.3</b> Dropped objects to be recovered and relocated where safe and practicable to do so.	<b>PS 13.3</b> Dropped objects are recovered and relocated where safe and practicable to do so.	<b>MC 13.3</b> Records demonstrate that attempts have been made to recover and relocate dropped objects where safe and practicable to do so.
	<b>C 2.1</b> See Section 6.7.2	<b>PS 2.1.1</b> See Section 6.7.2	<b>MC 2.1.1</b> See Section 6.7.2
		<b>PS 2.1.2</b> See Section 6.7.2	<b>MC 2.1.2</b> See Section 6.7.2

<sup>35</sup> Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	<p><b>C 13.4</b> Designated 'No dredge' out of zone alarms will be installed and used on the dredging vessel navigation system.</p>	<p><b>PS 13.4</b> Designated 'No dredge' out of zone alarms are in place and operational on the dredging vessel navigation system.</p>	<p><b>MC 13.4.1</b> Inspection demonstrate alarms in place and operational</p>
	<p><b>C 13.5</b> The trunkline touchdown point will be monitored during operations to ensure the trunkline is installed correctly.</p>	<p><b>PS 13.5</b> Trunkline touchdown point monitored, as required during pipelay operations and is laid in the designated area.</p>	<p><b>MC 13.5.1</b> Records demonstrate the trunkline touchdown point is monitored as required during pipelay operations and is laid in the designated area.</p>
	<p><b>C 13.6</b> Different rigging designs will be assessed to reduce likelihood of dropped pipe from issues such as sling slippage and will consider the use of spreader bars.</p>	<p><b>PS 13.6</b> Pipe transfers on the PV carried out using engineered rigging design, to prevent sling slippage</p>	<p><b>MC 13.6.1</b> Records show rigging design has been engineered for pipe transfers on the PV, to prevent sling slippage and dropped pipe</p>
	<p><b>C 13.7</b> Appropriate approval obtained from third party asset owner prior to crossing installation or Trunkline installation activities being carried out in proximity to asset</p>	<p><b>PS 13.7</b> Third party asset owner approval to carry out works i.e. third party crossing agreement / permit to work</p>	<p><b>MC 13.7</b> Records of agreement or permit</p>
	<p><b>C13.8</b> Concurrent activities between contractor vessels and third-party asset owner during rock crossing installation or Trunkline installation activities will be managed with SIMOPS planning</p>	<p><b>PS 13.8</b> SIMOPS plan implemented to manage concurrent activities for third party asset crossing, if concurrent activities identified.</p>	<p><b>MC 13.8</b> Records show SIMOPS plan developed and implemented if required during rock crossing or Trunkline installation</p>
	<p><b>C 13.9</b> Development of third party asset crossing installation procedure(s) to include damage prevention measures such as:</p> <ul style="list-style-type: none"> <li>• Real time monitoring during rock placement so bridge can see live multibeam data and no-rock zones</li> <li>• Installation weather limitations if required</li> </ul>	<p><b>PS 13.9</b> Damage prevention measures set out in crossing installation procedure implemented.</p>	<p><b>MC 13.9</b> Installation procedure developed and implemented.</p>
	<p><b>C 13.10</b></p>	<p><b>PS 13.10</b></p>	<p><b>MC 13.10</b></p>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	Lifting activities between vessels to be carried out in accordance with requirements of third-party crossing agreement / permitting	Transfer of pipes between vessels will be undertaken at the required distances specified in the third-party crossing agreement / permitting	Records show lifting activities complied with requirements

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### 6.8.7 Physical Presence (Unplanned) – Interaction with Marine Fauna

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.2.5 – Physical Presence (Unplanned): Collision with Marine Fauna														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7 Seabed Intervention Activities – Section 3.9 Trunkline Installation Activities – Section 3.11				<b>Existing Environment</b> Protected Species – Section 4.6 Cultural Values and Heritage – Section 4.9.1				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 6,10,15,23,25
Accidental entrainment of marine fauna from pre-lay trenching and dredging in Offshore Borrow Ground.						✓		A	E	1	L			
Accidental smothering/burial of marine fauna from spoil disposal and backfill.						✓		A	F	1	L			
Description of Source of Impact/Risk														
<p><b>Vessel Operations</b></p> <p>Vessels operating within the Operational Area may present a potential hazard to marine mammals and other protected marine fauna such as marine turtles and whale sharks. Vessel movements can result in collisions between the vessel (hull and propellers) and marine fauna, potentially resulting in superficial or serious injury that may affect life functions (e.g. movement and reproduction) or cause mortality.</p> <p>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.</p> <p>Several vessel types will be required to complete the activities associated with the Petroleum Activities Program, including larger vessels associated with installation and construction, and smaller support vessels (refer to Sections 3.9 and 3.11). The primary vessel-based activities relate to pipelay (PV, OSV and B-type vessel) and there are a number of seabed intervention related vessel-based activities that will occur along the proposed trunkline route at various times before and after the actual pipelay. For a description of concurrent activities refer to Section 6.2.1.</p> <p>Vessels within the Operational Area will be continuously moving at varying speeds, particularly within the Offshore Borrow Ground Project Area where vessel presence is limited to approximately two hours at a time. Project vessels</p> <p>This document is protected by copyright. No part of this document may be reproduced, adapted, transmitted, or stored in any form by any process (electronic or otherwise) without the specific written consent of Woodside. All rights are reserved.</p> <p>Controlled Ref No: SA0006AH0000004      Revision: 6      Page 430 of 582</p> <p>Uncontrolled when printed. Refer to electronic version for most up to date information.</p>														

within the Operational Area are likely to be travelling <8 knots (and will often be stationary), unless operating in an emergency. At times, vessels will be transiting within the Operational Area or to and from supply base where speed could be up to a maximum of about 15 knots, however are transitory through the area.

**TSHD Activities**

Dredging and trenching activities within the Trunkline Project Area and Offshore Borrow Ground Project Area have the potential to entrain fish and protected marine fauna such as marine turtles, through the unintentional removal of organisms by the suction field created by the TSHD (Reine and Clarke, 1998). Entrainment rates depend on a number of factors, including depth, dredger type, speed, and strength of suction field (Todd et al., 2014). The TSHD will sail slowly, typically at 1-1.5m/s during trunkline and borrow ground dredging.

**Detailed Impact Assessment**

**Assessment of Potential Impacts**

Unplanned interaction with marine fauna has the potential to occur within the Operational Area. There are a number of EPBC listed species with the potential to occur within the Operational Area (Section 4.6). It is recognised that there is both spatial and temporal variation in the potential for interaction with marine fauna. For example, the trunkline traverses a number of BIAs for marine species protected under the EPBC Act that may be seasonally present in the Operational Area, including migration BIAs for humpback whales and pygmy blue whales, a foraging BIA for whale sharks and breeding and nesting BIAs for marine turtles and seabirds. The trunkline route also traverses the Montebello Marine Park between KP 109 and KP 192. The North-west Marine Parks Network Management Plan (DNP, 2018a) lists the natural values of the Montebello AMP as including a range of threatened, migratory, marine or cetacean species listed under the EPBC Act, including overlapping BIAs. The BIAs and Habitat Critical to the survival of the species that overlap the Operational Area are summarised below:

- A pygmy blue whale migration BIA overlaps with deeper waters within the Trunkline Project Area. There is a higher likelihood of pygmy blue whale presence from April–July and October–January during their seasonal migrations. This BIA overlaps the location of continental slope crossing seabed preparation activities.
- A humpback whale migration BIA overlaps with the Operational Area. Humpback whales are expected to be most frequently encountered during pipelay and during the trenching and material disposal and Offshore Borrow Ground dredging and backfill, particularly during annual migrations ((July (northbound) and late August/September (southbound)).
- Flatback, green and hawksbill turtle internesting buffer BIAs and internesting Habitat Critical, and loggerhead turtle internesting buffer BIAs overlap with the Operational Area. Activities in proximity to these locations include pipelay and the works along the trunkline route (KP 32 to KP 50), including cycling of dredging and backfill between the Offshore Borrow Ground Project Area, Trunkline Project Area (KP 32 to KP 50), and disposal of material in Spoil Ground 5A.
- A whale shark foraging BIA overlaps the Trunkline Project Area at ~KP 72 to KP 199. Activities within the BIA are limited to pipelay, span rectification and surveys.

**Marine Mammals/Cetaceans**

Cetaceans are naturally inquisitive marine mammals. The reaction of cetaceans to the approach of a vessel is quite variable. Some species remain motionless when close to a vessel, while others are known to be curious and often approach ships that have stopped or are slow moving, although they generally do not approach and sometimes avoid faster moving ships (Richardson et al., 1995). The Whale and Dolphin Conservation Society (WDCS, 2006), indicates that some cetacean species, such as humpback whales, can detect and change course to avoid a vessel.

Collisions between vessels and marine mammals occur more frequently in areas where high vessel traffic and important habitat coincide (WDCS, 2006). In Australia, the majority of vessel strikes to known species involved humpback, southern right whale and sperm whales, in descending order (Peel et al., 2016). Van Warebeek et al. (2007) reported five blue whale ship strikes in the Southern Hemisphere. No vessel strike collisions were reported in the northern coast of Australia (Peel et al., 2016). The behaviour exhibited by whales prior to vessel collision varies, with some reported as being asleep/unmoving prior to the collision (Peel et al., 2016) and others displaying a ‘last-second flight response’ (Laist et al., 2001). Individual cetaceans engaged in behaviours such as feeding, mating or nursing may also be more vulnerable to vessel collisions when distracted by these activities (Commonwealth of Australia, 2017b).

The likelihood of vessel/whale collision being lethal is influenced by vessel speed—the greater the speed at impact, the greater the risk of mortality (Jensen and Silber, 2004; Laist et al., 2001). Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots. The risk of lethal injury to a large whale as a result of vessel strike is less than 10% at a speed of 4 knots (Vanderlaan and Taggart, 2007). Vessel-whale collisions at this speed are uncommon and, based on reported data contained in the NOAA database (Jensen and Silber, 2004) there only two known instances of collisions when the vessel was travelling at less than 6 knots; both of these were from whale-watching vessels that were deliberately positioned amongst whales.

The Conservation Management Plan for the blue whale identify vessel disturbance and strike as a threat to the EPBC listed species (Commonwealth of Australia, 2015a; TSSC, 2015b).

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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 for the Petroleum Activities Program intersects the pygmy blue whale migration BIA (from KP200km to KP274), and also overlaps with the broader pygmy blue whale distribution range (refer to Figure 4-12). Considering this overlap, as well as the recorded presence and satellite tracking of both north and south bound tagged individuals in the Operational Area (Thums et al. (2022)), it is likely that transient individuals or small groups are occasionally in and around the Operational Area during migratory north and south seasons (April to July and October to January, respectively) (McCauley, 2011; Gavrilov et al., 2018; Thums et al., 2022). Significant numbers of pygmy blue whales are not expected to be encountered, particularly outside peak periods for northbound or southbound migrations (Figure 4-12).

Whilst a portion of the Operational Area also overlaps the humpback whale migration BIA in the NWMR, this overlap represents a very small proportion of the overall area of the BIA (0.22%). Given this limited spatial overlap with the humpback whale migration BIA, the short duration of activities within the Operational Area, and the slow speeds at which project vessels operate (required to be 10 km or less as per C 6.7), collisions with humpback whales are considered highly unlikely. As outlined in Table 4-14, the humpback whale is not a listed threatened species under the EPBC Act, but is a listed Migratory species. Accordingly, there is no recovery plan in place for humpback whales, and no specific requirements with respect to potential impacts within BIAs.

Dugong are known to occur in and around seagrass growth areas. Vessel speed is understood to be the primary factor affecting vessel collision risk (Hodgson, 2004) with evidence showing dugongs fail to flee or evade the approach of fast vessels (Groom et al., 2004). Seagrasses have not been observed within the Operational Area and it is unlikely that large numbers of the species will be present.

The Snubfin dolphin is a coastal species found in inshore shallow waters and is unlikely to be encountered in the Operational Area.

Given the duration of activities within the Operational Area and the slow speeds at which project vessels operate, collisions with marine mammals are considered highly unlikely.

#### **Marine Reptiles**

The Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017a) recognises vessel strikes and dredging as key threats to EPBC listed marine turtle species. Dredging activities have the potential to entrain turtles, resulting in superficial or serious injury that may affect life functions, or cause mortality. Marine turtles at the surface or in shallow waters are at risk of vessel collision.

Hazel and Gyuris (2006) reviewed vessel strike data from 1999-2002 on the Queensland east coast and found that during that period at least 65 turtles were killed annually as a result of collisions with vessels. Green turtles, followed by loggerhead turtles comprised the majority of vessel related records, and 72% of cases were adult or sub-adult turtles (Hazel and Gyuris, 2006). In Australian waters, all species of marine turtle have been involved in vessel strikes (Commonwealth of Australia, 2016).

The effect of vessel speed on turtle flee response can be significant. A study by Hazel et al. (2007) found that 60% of green turtles fled from vessels travelling at 2.2 knots (4 km/h) while only 4% fled from vessels travelling at 10.2 knots (19 km/h). When fleeing 75% of turtles moved away from the vessel's track, 8% swam along the vessel track and 18% crossed in front of the vessel. The study concluded that most turtles would be unlikely to avoid vessels travelling at speeds greater than around 2.2 knots (Hazel et al., 2007; Commonwealth of Australia, 2017a). Furthermore, the relatively small size of turtles and the significant time spent below the surface makes their observation by vessel operators extremely difficult or impossible. Green turtles observed by Hazel et al. (2009) generally only exposed the dorsal-anterior part of the head above the surface of the water and not for longer than two seconds.

Dredging activities can be a direct source of impact to marine turtles and other marine fauna if individuals become caught in the dredge equipment (entrainment), or if smothering/burial occurs during spoil disposal or backfill. Entrainment of turtles during dredging may result in injury or mortality (Dickerson et al., 1991). The risk is considerably reduced by use of standard mitigations and protection devices (Dickerson, 2004). The implementation of exclusion zones and observation zones for dredging, spoil disposal and backfilling will minimise the risk of entrainment and smothering/burial of marine turtles. Turtle deflection chains will also be installed to the TSHD drag head to reduce entrainment of turtle during dredging. Potential impacts from dredging are likely to affect individuals rather than cause a population level impact.

Within the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017a) there is reference to undertaking dredging in important internesting habitat outside peak nesting seasons. For the section of trunkline (i.e. KP 32 to KP 50) that requires trenching and backfilling, consideration has been given to fauna mitigation methods such as the seasonal timing to limit disturbance to turtles, this has been considered within the ALARP assessment below.

The Operational Area overlaps with an internesting buffer BIA and Habitat Critical to the survival of flatback turtles. However, it is noted that the BIA and Habitat Critical are considered very conservative as they are based on the maximum range of internesting females, and most marine turtles are more likely to remain near their nesting beaches. The 60 km internesting buffer for flatback turtles in the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017a) is based primarily on the movements of tagged internesting flatback turtles along the NWS reported by Whittock et al. (2014), which found that flatback turtles may demonstrate internesting displacement distances up to

62 km from nesting beaches. However, these movements were confined to longshore movements in nearshore coastal waters or travel between island rookeries and the adjacent mainland (Whittock et al., 2014).

Whittock et al. (2016a) more precisely defined flatback turtle internesting habitat along the NWS. This study developed a habitat suitability map to identify areas where internesting flatback turtles may be present along the NWS, based on data compiled for a suite of environmental variables and satellite tracks of 47 internesting flatback turtles from five different mainland and island rookeries tracked over 1289 days. Whittock et al. (2016b) defined suitable internesting habitat as water 0–16 m deep and within 5–10 km of the coastline, while unsuitable internesting flatback habitat was defined as waters >25 m deep and >27 km from the coastline.

The evidence that suitable internesting habitat for flatback turtles is likely to be limited to relatively shallow waters within close proximity of the coastline is further supported by data from satellite telemetry of 11 flatback turtles after nesting on the Lacepede Islands (Thums et al., 2017). This study found that “*During the inter-nesting phase, flatback turtles remained at an average distance of 15.75 ± 12.25 km from West Lacepede Island, in water depths of 16 ± 3 m...*” (Thums et al., 2017).

Thus, there is no evidence to date to indicate flatback turtles swim out into deep offshore waters during the internesting period.

It is acknowledged that an increased number of turtles may be encountered seasonally during the Petroleum Activities Program within the vicinity of offshore islands/archipelagos during internesting/nesting seasons. 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 or entrainment during dredging activities. In addition, activities within sensitive turtle areas (BIAs and Habitat Critical to the survival) will be conducted over a period of months (Section 4.6.2), further reducing the potential for impact at the individual and population level.

**Fish, Sharks and Rays**

Boat strike is recognised by the Approved Conservation Advice for *Rhincodon typus* (whale shark) (TSSC, 2015a) as one of the threats to their recovery. Whale sharks are at risk from vessel strikes when feeding at the surface or in shallow waters (where there is limited option to dive). Whale sharks may traverse offshore NWS waters including the Operational Area during their migrations to and from Ningaloo Reef, as demonstrated by acoustic detections of tagged whale sharks at the North Rankin A and Goodwyn A platforms during two periods—June to July and October to January (Thomson et al. 2021) The Operational Area is located at least 215 km from the whale shark foraging (high density prey) BIA adjacent to Ningaloo Reef. The Operational Area overlaps a small proportion of the foraging BIA for whale sharks between about KP 72 and KP 199, and they may be seasonally present between March and November (with the annual peak aggregation at Ningaloo Reef between April and May) (Figure 4-8). The risk of vessel strike may be elevated during this period. However, this overlap represents only 0.15% of the overall area of the whale shark foraging BIA. Accordingly, it is expected that whale shark presence within the Operational Area would not comprise significant numbers and their presence would be transitory and of a short duration. Given the short duration of activities within the Operational Area and the slow speeds at which project vessels operate, vessel collisions with whale sharks are considered highly unlikely.

Smaller fish may also be at risk of injury or mortality from vessels through being caught in thrusters during station keeping operations (i.e. during DP). However, this is unlikely given the low presence of individuals, combined with the avoidance behaviour commonly displayed during station keeping operations.

Dredging activities can be a source of impact to demersal species such as sawfish through potential entrainment or if smothering/burial occurs during spoil disposal or backfill. The implementation of mitigations and protection devices outlined below will the minimise risk of entrainment and/or smothering/burial of demersal species and any impacts are likely to affect individuals rather than cause a population level impact.

**Cumulative Impacts**

There is potential for some cumulative impacts to marine fauna to occur as a result of overlap with the Scarborough Drilling and Completions Petroleum Activities Program and installation of the PLET, located at the northern extent of the Operational Area. Given the offshore waters and deep water depths (approx. 900 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	Consequence	Likelihood	Risk Rating
Marine mammals	Injury/mortality to marine fauna	High value species	Slight (E)	Highly Unlikely	Low
Marine reptiles	Injury/mortality to marine fauna	High value species	Slight (E)	Highly Unlikely	Low

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Fish, sharks and rays	Change in fauna behaviour Injury/mortality to marine fauna	High value species	Slight (E)	Highly Unlikely	Low

**Overall Risk Consequence:** The overall risk consequence/risk rating for interaction with marine fauna is Low based on a Slight consequence to the high value receptors (marine fauna). The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures <sup>36</sup> : <ul style="list-style-type: none"> <li>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.</li> <li>Vessels will not approach closer than 50 m for a dolphin or and/or 100 m for a whale (with the exception of animals bow riding).</li> <li>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.</li> </ul>	F: Yes. CS: Minimal cost. Standard practice.	Implementation of these controls will reduce the likelihood of a collision between a cetacean occurring. The consequence of a collision is unchanged.	Controls based on legislative requirements – must be adopted.	Yes <b>C 6.1</b>
Vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around whale sharks can potentially reduce the underwater noise footprint of a vessel	Legislative control for state waters, Whale Shark Interaction Protocol, being adopted for the this Petroleum Activities Program.	Yes <b>C 6.10</b>

<sup>36</sup>For safety reasons, the distance requirements are not applied to vessel(s) holding station or with limited manoeuvrability e.g. anchor handling, loading, back-loading, bunkering, close standby cover for overside working and emergency situations.

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<p>Comply with in force Sea Dumping Permit (No. SD2019/3982 or amended), which includes the following:</p> <ul style="list-style-type: none"> <li>• Prior to the commencement of the dumping activities, Contractor must ensure that a check is undertaken, using binoculars from a high observation platform, for marine species within the observation zone.</li> <li>• If any marine species are sighted in the observation zone, must not commence dumping activities until either 10 minutes after the last marine species is observed in the observation zone, or the vessel has moved to another area of the disposal site where it can maintain a minimum distance of 300 metres between the vessel and any marine species.</li> </ul>	<p>F: Yes. CS: Standard practice.</p>	<p>Implementation of these controls will reduce the likelihood of an interaction with marine fauna during spoil disposal. The consequence of a collision is unchanged.</p>	<p>Controls based on legislative requirements – must be adopted.</p>	<p><b>Yes C 2.1</b></p>
<p>Installation of turtle deflection chains in front of the TSHD drag head.</p>	<p>F: Yes. Turtle deflection chains in front of the drag head will reduce likelihood of entrainment of turtle during dredging. CS: No significant additional cost</p>	<p>Implementation of these controls will reduce the likelihood of an entrainment of turtle occurring as the chains will reduce entrainment. The consequence is unchanged.</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p><b>Yes C 14.5</b></p>
<b>Good Practice</b>				
<p>The use of trained vessel crew on B-Type vessels PV and OCV to observe and record cetacean presence / activity as required.</p>	<p>F: Yes. Vessel bridge crews already maintain a constant watch during operations so can be trained in, and carry out, cetacean observations.</p>	<p>Trained MFOs on vessel bridge can increase understanding of PBW presence in the area of the PV, with information assisting in decision making relating to cumulative</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p><b>Yes C 6.2</b></p>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
	CS: Additional cost of training	noise reduction measures.		
Manage vessel speed in the humpback and PBW whale BIAs in migration seasons within the Operational Area (excluding Pilbara Port)	F: Yes. It is possible to carry out for vessels transiting within the Operational Area CS: Slower vessel speeds reduces fuel use but will impact slightly with longer transit times for vessels.	There is mounting evidence that reduction of vessel speeds can reduce vessel underwater noise emissions and increase the likelihood that fauna will be seen by vessels (and have more time to react) – reducing possibility of vessel strike.  The Pilbara Port boundaries have been excluded As the Pilbara Port Authority sets speed limits for within the Port boundaries	Benefits outweigh cost/sacrifice	Yes <b>C 6.7</b>
Use of Marine Fauna Observers (MFOs) on every vessel in the Petroleum Activities Program within the Operational Area	F: Yes CS: Training of vessel crew and time away from primary vessel duties while undertaking observations or employment and POB impact of professional MFO.	Additional risk reduction potential from this control is limited due to existing controls reducing vessel speed in the Operational Area, trained vessel crew as MFOs on vessels associated with additional marine fauna management controls.  Vessels which will not have MFOs such as supply and survey vessels will have low residence time in Operational Area and thus are inherently lower risk.	Limited additional risk reduction potential due to other controls adopted and nature of vessel operations.	<b>No</b>
For TSHD operations during daylight hours (excluding transit) adherence to defined observation and exclusion zone: <ul style="list-style-type: none"><li>Whales: observation zone 300 m; exclusion zone 100 m.</li><li>Dolphins: observation zone 150 m (except for</li></ul>	F: Yes. CS: Standard practice.	Implementation of these controls will reduce the likelihood of an interaction with marine fauna during PAP. The consequence of a collision is unchanged.	Benefits outweigh cost/sacrifice.	Yes <b>C 14.2</b>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<p>material disposal operations where the observation zone is 300 m); exclusion zone 50 m.</p> <ul style="list-style-type: none"> <li>Dugongs: observation zone 150 m (except for material disposal operations where the observation zone is 300m); exclusion zone 50 m.</li> <li>Turtles: observation zone 100 m (except for material disposal operations where the observation zone is 300 m); exclusion zone 50 m.</li> </ul>				
<p>Project vessels will not travel greater than 6 knots within 100 m of a turtle (observation zone) and not approach closer than 50 m. If the turtle shows signs of being disturbed, project vessels will immediately withdraw from the observation zone at a constant speed of less than 6 knots.</p>	<p>F: Yes. CS: Standard practice.</p>	<p>Implementation of controls for reduced vessel speed around turtles can potentially reduce the interaction risk.</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p>Yes <b>C 14.6</b></p>
<b>Professional Judgement – Eliminate</b>				
No additional controls identified.				
<b>Professional Judgement – Substitute</b>				
No additional controls identified.				
<b>Professional Judgement – Engineered Solutions</b>				
<p>For dredging vessel operations in excess of six knots in the humpback whale migratory BIA between 1 August and 31 October (inclusive), trained vessel crew as MFO to monitor for whales from a high observation platform on the vessel using binoculars by day and thermal imaging</p>	<p>F: Yes. Trained vessel crew would reduce the likelihood of a vessel interaction with marine fauna by identifying whales within close proximity to the moving vessel. CS: Additional cost for MFO training.</p>	<p>Use of trained vessel crew as MFO during dredging activities is a control to mitigate and reduce likelihood of interaction with humpback cow/calf pairs on their southern migration. Note this is an extension of the conditions EPBC</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p>Yes <b>C 14.3</b></p>

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
equipment at night or in periods of low visibility. Vessels must not: <ul style="list-style-type: none"> <li>travel faster than six knots within 300 m of a whale</li> <li>approach closer than 100 m from a whale.</li> </ul> If a whale(s) shows any sign of being disturbed inside the distances specified, the vessel will immediately withdraw from the whale(s) at a constant speed of less than six knots.		2018/8362 particular manner requirements.		
At completion of dredge run (i.e. fill of hopper), stop dredge pumps as soon as practicable after the TSHD drag head is lifted from the seafloor.	F: Yes. Stopping dredge pumps as soon as practicable after the drag head is lifted from the seafloor will reduce likelihood of entrainment. CS: No additional cost	Implementation of this controls will reduce the likelihood of an entrainment and impact to turtle occurring due to stopping dredge once off the seafloor. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes <b>C 14.4</b>

**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 risks and consequences of unplanned interaction with 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**

The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5):

- Overall risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.
- EPOs and controls in the Scarborough 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 Scarborough OPP. Interactions with marine fauna was raised during stakeholder consultation (Appendix F, Table 1) and these were considered in the finalisation of the EP.

**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. 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 6.9.2). The adopted controls are considered consistent with

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industry good practice and professional judgement and meet the requirements of Part 8 (Division 8.1) of the EPBC Regulations 2000.

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 interaction with marine fauna to a level that is broadly acceptable.

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 6</b> 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.</p> <p><b>EPO 10</b> 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.</p> <p><b>EPO 15</b> Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fish, marine mammals, marine reptiles, or the spatial distribution of a population.</p> <p><b>EPO 23</b> 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.</p> <p><b>EPO 25</b></p>	<p><b>C 6.1</b> EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures<sup>37</sup>:</p> <ul style="list-style-type: none"> <li>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.</li> <li>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).</li> <li>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.</li> </ul>	<p><b>PS 6.1.1</b> Refer to Section 6.7.6.</p>	<p><b>MC 6.1.1</b> Refer to Section 6.7.6.</p>
		<p><b>PS 6.1.2</b> Refer to Section 6.7.6.</p>	<p><b>MC 6.1.2</b> Refer to Section 6.7.6.</p>
	<p><b>C 6.10</b> 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<sup>6</sup></p>	<p><b>PS 6.10</b> Refer to Section 6.7.6.</p>	<p><b>MC 6.10.1</b> Refer to Section 6.7.6.</p>
	<p><b>C 2.1</b> Comply with in force Sea Dumping Permit (No. SD2019/3982 or amended), which includes the following:</p> <ul style="list-style-type: none"> <li>Prior to the commencement of the dumping activities, Contractor must ensure</li> </ul>	<p><b>PS 2.1.3</b> Refer to Section 6.7.2.</p>	<p><b>MC 2.1.3</b> Refer to Section 6.7.2.</p>

<sup>37</sup>For safety reasons, the distance requirements are not applied to vessel(s) holding station or with limited manoeuvrability e.g. anchor handling, loading, back-loading, bunkering, close standby cover for overside working and emergency situations.

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
Undertake the Petroleum Activities Program in a manner which prevents a vessel strike with protected marine fauna during project activities.	<p>that a check is undertaken, using binoculars from a high observation platform, for marine species within the observation zone.</p> <ul style="list-style-type: none"> <li>If any marine species are sighted in the observation zone, must not commence dumping activities until either 10 minutes after the last marine species is observed in the observation zone, or the vessel has moved to another area of the disposal site where it can maintain a minimum distance of 300 metres between the vessel and any marine species.</li> </ul>		
	<p><b>C14.2</b> During daylight hours, trained vessel crew onboard the TSHD will visually assess marine megafauna and the following observation and exclusion zones will be adhered to during dredging and spoil disposal:</p> <ul style="list-style-type: none"> <li>Whales: observation zone 300 m; exclusion zone 100 m</li> <li>Dolphins: observation zone 150 m (except for material disposal operations where the observation zone is 300m); exclusion zone 50 m</li> <li>Dugongs: observation zone 150 m (except for material disposal operations where the observation zone is 300m); exclusion zone 50 m</li> <li>Turtles: observation zone 100 m (except for material disposal operations where the observation zone is 300m); exclusion zone 50 m.</li> </ul>	<p><b>PS 14.2</b> Compliance with defined observation and exclusion zones for TSHD operations during daylight hours (excluding transit).</p>	<p><b>MC 14.2.1</b> Records of sighting and locations of marine fauna in the vessels' daily logbook, including any corrective actions taken</p>
	<b>C 14.6</b>	<b>PS 14.6.1</b>	<b>MC 14.6.1</b>

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	Project vessels will not travel greater than 6 knots within 100 m of a turtle (observation zone) and not approach closer than 50 m. If the turtle shows signs of being disturbed, project vessels will immediately withdraw from the observation zone at a constant speed of less than 6 knots.	Project vessels complied with speed limits within 100 m of a turtle (observation zone) and not approached closer than 50 m.	Records demonstrate no breaches of designated zones and responses.
	<p><b>C 14.3</b></p> <p>For dredging vessel operations in excess of six knots in the humpback whale migratory BIA between 1 August and 31 October (inclusive), trained vessel crew as MFO to monitor for whales from a high observation platform on the vessel using binoculars by day and thermal imaging equipment at night or in periods of low visibility.</p> <ul style="list-style-type: none"> <li>• Vessels must not:</li> <li>• travel faster than six knots within 300 m of a whale</li> <li>• approach closer than 100 m from a whale.</li> </ul> <p>If a whale(s) shows any sign of being disturbed inside the distances specified, the vessel will immediately withdraw from the whale(s) at a constant speed of less than six knots.</p>	<p><b>PS 14.3</b></p> <p>For dredging vessel operations in the humpback whale migratory BIA between 1 August and 31 October (inclusive) vessel speed not exceeded six knots within 300 m from a whale and vessel not approach closer than 100 m from a whale.</p>	<p><b>MC 14.3.1</b></p> <p>Records of MFO training for key vessel crew</p> <p>Records of sighting and locations of marine fauna in the vessels' daily logbook, including any corrective actions taken</p>
	<p><b>C 14.4</b></p> <p>At completion of dredge run (i.e. fill of hopper), stop dredge pumps as soon as practicable after the TSHD drag head is lifted from the seafloor.</p>	<p><b>PS 14.4</b></p> <p>At completion of dredge run (i.e. fill of hopper) dredge pumps have been stopped as soon as practicable after the TSHD drag head is lifted from the seafloor.</p>	<p><b>MC 14.4.1</b></p> <p>Dredge logs shows timing of pump cessation</p>
	<p><b>C 14.5</b></p> <p>Installation of turtle deflection chains in front of the TSHD drag head.</p>	<p><b>PS 14.5</b></p> <p>TSHD drag head has turtle deflection chains installed.</p>	<p><b>MC 14.5.1</b></p> <p>Records show that TSHD drag head has turtle deflection chains installed.</p>
	<p><b>C 6.2</b></p> <p>The use of trained vessel crew<sup>38</sup> as MFOs on B-Type</p>	<p><b>PS 6.2</b></p> <p>Refer to Section 6.7.6.</p>	<p><b>MC 6.2.1</b></p> <p>Refer to Section 6.7.6.</p>

<sup>38</sup> A suitably trained person who can make observations of fauna as part of their usual vessel activities (i.e. captain, first officer, bridge crew)

<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
	vessels, PV and OCV to observe and record cetacean presence / activity as required.		
	<b>C 6.7</b> Manage vessel speed in humpback and PBW whale BIAs in migration seasons within the Operational Area (excluding Pilbara Port)	<b>PS 6.7.1</b> Refer to Section 6.7.6.	<b>MC 6.7.1</b> Refer to Section 6.7.6.

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### 6.8.8 Physical Presence (Unplanned) – Accidental Introduction and Establishment of Invasive Marine Species

Scarborough OPP – Relevant Impact Assessment Section														
Section 7.2.4 – Physical Presence (Unplanned): IMS														
Context														
<b>Relevant Activities</b> Vessel Operations – Section 3.7 ROV Operations – Section 3.8.3				<b>Existing Environment</b> Marine Regional Characteristics – Section 4.2 Physical Environment – Section 4.4 Habitats and Biological Communities – Section 4.5				<b>Stakeholder consultation</b> 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 of invasive marine species (IMS) within the Operational Area					✓	✓	✓	A	D	0	L	LCS GP PJ	Broadly Acceptable	EPO 6,26
Description of Source of Impact/Risk														
<p><b>Vessel Operations</b></p> <p>During the Petroleum Activities Program, vessels will be transiting to and from the Operational Area, and may mobilise from an Australian port or directly from international waters. Project vessels include dredging, installation and construction vessels, and other support vessels (refer to Section 3.9.2 and 3.9.3).</p> <p>The RIV may mobilise with internationally sourced rock onboard for use during the Petroleum Activities Program. This rock will be sourced from terrestrial based quarries and be subject to the requirements of Biosecurity Act 2015 and other relevant legislation for importation.</p> <p>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, TSHD drag head 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 as cargo is loaded or to balance vessels under load.</p> <p>Cross contamination between vessels can also occur (e.g. IMS translocated between project vessels) during times when vessels need to be alongside each other.</p>														
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														
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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.

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, Coral, Seagrass and Macroalgae**

Epifauna, infauna and benthic habitats are susceptible to impacts from IMS due to the risk of changes to the ecosystem dynamics such as competition for resources and predation. 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), 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.

The deeper offshore open waters of the Operational Area are not conducive to the settlement and establishment of IMS. The Trunkline Project Area and Offshore Borrow Ground Project Area in shallower waters (30 – 40 m) present a slightly increased risk of IMS establishment, however, IMS require hard substrate/features on the seabed to attach to, none of which is present within the Operational Area. Therefore the risk of establishment, whilst credible, is remote given the distance to hard substrates around islands and shoals, to the Borrow Ground. In addition shallower waters represent a very small area of the overall Operational Area.

**Industry, Shipping, and Defence**

IMS have also proven economically damaging to areas where they have been introduced and established. Such impacts include direct damage to assets (fouling of vessel hulls and infrastructure) and depletion of commercially harvested marine life (e.g. shellfish stocks). IMS have proven particularly difficult to eradicate from areas once established. If the introduction is detected early, eradication may be effective but is likely to be expensive, disruptive and, depending on the method of eradication, harmful to other local marine life. Given the low likelihood of IMS translocation to, and colonisation within the Operational Area, project activities are unlikely to result in establishment of IMS, and as such not adversely affect other marine user activities in the region.

**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 an IMS translocation. The results of this assessment are presented in Table 6-32.

**Table 6-32: Credibility, consequence and likelihood of introducing IMS**

IMS Introduction Location	Credibility of Introduction	Consequence of Introduction	Likelihood
Introduced to Operational Area and establishment on the seafloor	<b>Credible</b> There is potential for IMS to be introduced and established in the shallower waters of the Trunkline Project Area and Borrow Ground.	<b>Environment (D)</b> The deeper offshore open waters of the Operational Area are not conducive to the settlement and establishment of IMS. The Trunkline Project Area and Offshore Borrow Ground Project Area in shallower waters (30 – 40 m) present a slightly increased risk of IMS establishment, however, IMS require hard substrate/features on the seabed to attach to, none of which is present within the Operational Area. Therefore the risk of establishment, whilst credible, is remote given the distance to hard substrates around islands and shoals, to the Borrow Ground.	<b>Remote (0)</b> In the deeper areas of the Operational Area establishment of IMS is unlikely to occur on the seabed due to the lack of light or suitable habitat and the areas distance from shorelines and/or critical habitat. The risk is slightly greater in the shallower waters of the Trunkline Project Area and Offshore Borrow Ground Project Area, nearer the State waters boundary; however, the seabed remains featureless and not conducive to the



			settlement and establishment of IMS.
Introduced to Operational Area and establishment on a vessel.	<b>Credible</b> There is potential for the transfer of marine pests between vessels within the Operational Area.	<b>Reputation – E</b> If IMS were to establish on a vessel this could potentially impact the vessel operationally through the fouling of intakes, result in translocation of an IMS into the Operational Area and, depending on the species, potentially transfer of an IMS to other 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 minor impact to Woodside’s reputation, particularly with Woodside’s contractors, and would likely have a reputational impact on future proposals.	<b>Remote (0)</b> Interactions between vessels will be limited during the Petroleum Activities Program. 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 vessels and to other marine environments beyond the Operational Area.	<b>Not Credible</b> This risk is considered so remote that it is not credible for the purposes of the Petroleum Activities Program.  The transfer of a marine pest between vessels was considered remote, given the offshore open ocean environment (i.e. transfer pathway discussed above).  For a marine pest to then establish into a mature spawning population on the 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).		

**Cumulative Impacts**

Cumulative impacts are described in Section 8 of the Scarborough OPP (SA0006AF0000002, rev 5). No cumulative impacts have been identified as a result of the introduction of IMS.

**Summary of Assessment Outcomes**

Receptor	Impact	Receptor Sensitivity	Consequence	Likelihood	Risk Rating
Epifauna and infauna	Change in ecosystem dynamics	Low value habitat (homogenous)	Negligible (F)	Remote	Low
Industry, shipping and defence	Changes to the functions, interests or activities of other users	Medium value	Slight (E)	Remote	Low

**Overall Risk Consequence:** The overall risk consequence/risk rating for the introduction of IMS is Low based on a Slight consequence to the most sensitive receptors (other marine users). The risk consequence /risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.

<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
<b>Legislation, Codes and Standards</b>				
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.	Reduces the likelihood of transfer of marine pests between vessels within the Operational Area. No change in consequence would occur.	Controls based on legislative requirements under the <i>Biosecurity Act 2015</i> – must be adopted.	Yes <b>C 15.1</b>
Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	F: Yes. CS: Standard practice.	Reduces the likelihood of transfer of marine pests between vessels within the Operational Area. No change in consequence would occur.	Controls based on legislative requirements under the <i>Biosecurity Act 2015</i> – must be adopted.	Yes <b>C 15.2</b>
<b>Good Practice</b>				
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 transfer of marine pests between project vessels and immersible equipment within the Operational Area is reduced. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes <b>C 15.3</b>
<b>Professional Judgement – Eliminate</b>				
No discharge of 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	Not assessed, control not feasible.	Not assessed, control not feasible.	No

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
	safety critical requirement. CS: Not assessed, control not feasible.			
Eliminate use of vessels.	F: No. Given that vessels must be used to implement the Petroleum Activities 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
<b>Professional Judgement – Substitute</b>				
Source project vessels based in Australia only.	F: Potentially. Limiting activities to only use local vessels could potentially pose a significant risk in terms of time and duration of sourcing a vessel, as well as the ability of the local vessels to perform the required tasks. For example, there are limited TSHD vessels based in Australian waters. While the Petroleum Activities Program will attempt to source 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.	Sourcing vessels from within Australian will reduce the likelihood of IMS from outside Australian waters, however, it does not reduce the likelihood of introduction of species native to Australia but alien to the Operational Area and NWMR, or of IMS that have established elsewhere in Australia. The consequence is unchanged.	Disproportionate. Sourcing vessels from Australian waters may result in a reduction in the likelihood of IMS introduction to the Operational Area; however, the potential cost of implementing this control is grossly disproportionate to the minor environmental gain (or reducing an already remote likelihood of IMS introduction) potentially achieved by using only Australian based vessels, consequently this risk is considered not reasonably practicable.	No
IMS inspection of all project vessels.	F: Yes. Approach to inspect vessels could be a feasible option. CS: Significant cost and schedule impacts. In addition, Woodside's	Inspection of all vessels for IMS would reduce the likelihood of IMS being introduced to the Operational Area. However, this	Disproportionate. The cost/sacrifice outweighs the benefit gained, as other controls to be	No

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<b>Demonstration of ALARP</b>				
<b>Control Considered</b>	<b>Control Feasibility (F) and Cost/Sacrifice (CS)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Control Adopted</b>
	IMS risk assessment process is seen to be more cost effective as this control allows Woodside to manage the introduction of marine pests through biofouling, while targeting its efforts to and resources to areas of greatest concern.	reduction is unlikely to be significant given the other control measures implemented. No change in consequence would occur.	implement achieve an ALARP position.	
<b>Professional Judgement – Engineered Solution</b>				
No additional controls identified.				
<b>ALARP Statement:</b>				
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 risks and consequences of the introduction of IMS. 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.				

<b>Demonstration of Acceptability</b>
<b>Acceptability Criteria and Assessment</b>
The Petroleum Activities Program meets the acceptability criteria (Section 2.3.5): <ul style="list-style-type: none"> <li>• Overall risk consequence/risk ratings for individual receptors are consistent with the levels rated in the Scarborough OPP.</li> <li>• EPOs and controls in the Scarborough OPP that are relevant to an unplanned introduction of IMS have been adopted.</li> <li>• There are no changes to internal/external context specific to this risk from the Scarborough OPP, including issues raised during stakeholder consultation.</li> </ul>
<b>Acceptability Statement:</b>
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 Minor. 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 acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks and consequences of an accidental introduction of IMS to a level that is broadly acceptable.

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<b>Environmental Performance Outcomes, Standards and Measurement Criteria</b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 6</b> 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.</p> <p><b>EPO 26</b> Undertake the Petroleum Activities Program in a manner which prevents a known or potential pest species (IMS) becoming established.</p>	<p><b>C 15.1</b> 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 (&gt;12nm).</p>	<p><b>PS 15.1</b> Prevent the translocation of IMS within the vessel's ballast water from high risk locations to the Operational Area.</p>	<p><b>MC 15.1.1</b> Ballast Water Records System maintained by vessels which verifies compliance against Australian Ballast Water Management Requirements.</p>
	<p><b>C 15.2</b> Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.</p>	<p><b>PS 15.2</b> Compliance with Australian Biofouling Management Requirements.</p>	<p><b>MC 15.2.1</b> Records of implementation of biofouling management measures and pre-arrival reporting</p>
	<p><b>C 15.3</b> 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.</p>	<p><b>PS 15.3.1</b> Before entering the Operational Area, project vessels and immersible equipment are determined to be low risk<sup>39</sup> of introducing IMS of concern.</p>	<p><b>MC 15.3.1</b> Records of IMS risk assessments maintained for all project vessels and immersible equipment entering the Operational Area to undertake the Petroleum Activities Program.</p>
		<p><b>PS 15.3.2</b> 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.</p>	<p><b>MC 15.3.2</b> Records confirm that the IMS risk assessments undertaken by an Environment Adviser or IMS inspector (as relevant).</p>

<sup>39</sup> Low risk of introducing IMS of concern is defined as either no additional management measures required or, management measures have been applied to reduce the risk.

## 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 routine acoustic emissions (Section 6.7.6) 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.

### 6.9.3 Recovery Plan and Threat Abatement Plan Assessment

As described in Section 2.4, NOPSEMA will not accept an EP that is inconsistent with a recovery plan or threat abatement plan for a listed threatened species or ecological community. This section described the assessment the Woodside has taken 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 in the Environment Protection and Biodiversity Conservation Act 1999, 2015 – 2025 (Commonwealth of Australia, 2015a).
- Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) 2014 (Commonwealth of Australia, 2014b).
- Sawfishes and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015c).
- Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans 2018 (Commonwealth of Australia, 2018).

Table 6-33 list 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 6-34 to Table 6-38.

**Table 6-33: Identification of applicability of recovery plan and threat abatement plan objectives and action areas**

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	Licence / Titleholder	Petroleum Activities Program
<b>Marine Turtle Recovery Plan</b>			
<b>Long-term Recovery Objective:</b> 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
<b>Interim Recovery Objectives</b>			
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	
<b>Action Areas</b>			
<b>A. Assessing and addressing threats</b>			
A1. Maintain and improve efficacy of legal and management protection	Y	Y	
A2. Adaptively manage turtle stocks to reduce risk and build resilience to climate change and variability	Y		
A3. Reduce the impacts of marine debris	Y	Y	Y
A4. Minimise chemical and terrestrial discharge	Y	Y	Y
A5. Address international take within and outside Australia’s jurisdiction	Y		
A6. Reduce impacts from terrestrial predation	Y		
A7. Reduce international and domestic fisheries bycatch	Y		
A8. Minimise light pollution	Y	Y	Y
A9. Address the impacts of coastal development/infrastructure and dredging and trawling	Y	Y	
A10. Maintain and improve sustainable Indigenous management of marine turtles	Y		
<b>B. Enabling and measuring recovery</b>			
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
<b>Blue Whale Conservation Management Plan</b>			
<b>Long-term recovery objective:</b> Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list	Y	Y	Y
<b>Interim Recovery Objectives</b>			
The conservation status of blue whale populations is assessed using efficient and robust methodology	Y		

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EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	Licence / Titleholder	Petroleum Activities Program
The spatial and temporal distribution, identification of BIAs, and population structure of blue whales in Australian waters is described	Y	Y	Y
Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
<b>Action Areas</b>			
<b>A. Assessing and addressing threats</b>			
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>B. Enabling and Measuring Recovery</b>			
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
<b>Grey Nurse Shark Recovery Plan</b>			
<b>Overarching Objective</b>			
To assist the recovery of the grey nurse shark in the wild, throughout its range in Australian waters, with a view to: <ul style="list-style-type: none"> <li>improving the population status, leading to future removal of the grey nurse shark from the threatened species list of the EPBC Act</li> <li>ensuring that anthropogenic activities do not hinder the recovery of the grey nurse shark in the near future, or impact on the conservation status of the species in the future</li> </ul>	Y	Y	Y
<b>Specific Objectives</b>			
Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the grey nurse shark in Australian waters	Y		
Quantify and reduce the impact of commercial fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
Quantify and reduce the impact of recreational fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range	Y		
Where practicable, minimise the impact of shark control activities on the grey nurse shark	Y		
Investigate and manage the impact of ecotourism on the grey nurse shark	Y		
Manage the impact of aquarium collection on the grey nurse shark	Y		
Improve understanding of the threat of pollution and disease to the grey nurse shark	Y	Y	Y

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EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	Licence / Titleholder	Petroleum Activities Program
Continue to identify and protect habitat critical to the survival of the grey nurse shark and reduce the impact of threatening processes within these areas	Y	Y	
Continue to develop and implement research programs to support the conservation of the grey nurse shark	Y	Y	
Promote community education and awareness in relation to grey nurse shark conservation and management	Y		
<b>Sawfish and River Sharks Recovery Plan</b>			
<b>Primary Objective</b>			
To assist the recovery of sawfish and river sharks in Australian waters with a view to: <ul style="list-style-type: none"> <li>improving the population status leading to the removal of the sawfish and river shark species from the threatened species list of the EPBC Act</li> <li>ensuring that anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future</li> </ul>	Y	Y	
<b>Specific Objectives</b>			
Reduce and where possible, eliminate adverse impacts of commercial fishing on sawfish and river sharks species.	Y		
Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species.	Y		
Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species.	Y		
Reduce and, where possible, eliminate the impacts of illegal, unregulated and unreported fishing (IUU) on sawfish and river shark species.	Y		
Reduce and, where possible, eliminate adverse impacts on habitat degradation and modification on sawfish and river shark species.	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life.	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of collection for marine aquaria on sawfish and river shark species.	Y		
Improve the information base to allow the development of a quantitative framework to assess the recovery of, and inform management options for, sawfish and river shark species.	Y		
Develop research programs to assist conservation of sawfish and river shark species.	Y	Y	
Improve community understanding and awareness in relation to sawfish and river shark conservation and management.	Y		
<b>Marine Debris Threat Abatement Plan</b>			
<b>Objectives</b>			
Contribute to long-term prevention of the incidence of marine debris	Y	Y	

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EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	Licence / Titleholder	Petroleum Activities Program
Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations	Y	Y	Y
Remove existing marine debris	Y		
Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris	Y		
Increase public understanding of the causes and impacts of harmful marine debris, including microplastic and hazardous chemical contaminants, to bring about behaviour change	Y		

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**Table 6-34: 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
<b>Marine Turtle Recovery Plan</b>	<b>Action Area A1:</b> Maintain and improve efficacy of legal and management protection	<b>Action:</b> Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival of marine turtles.	Refer to Section 6.7.4 and Section 6.8.7 <b>Not inconsistent assessment:</b> The assessment of light emissions and potential vessel collisions has considered the potential impacts to marine turtles.  Management of the Petroleum Activities Program will ensure that marine turtles are not displaced from identified habitat critical to the survival of marine turtles.	<b>EPO 5 , EPO 12 and EPO 15</b> <b>C 4.1, 4.2, 4.3, 4.4, 4.5 and 4.6</b> <b>EPS 4.1, 4.2, 4.3, 4.4, 4.5 and 4.6</b>  <b>C 6.1, 6.10, 6.14.2, 14.6, 14.5</b>  <b>EPS 6.1.2, 6.10, 14.2, 14.6.1, 14.5</b>
		<b>Action:</b> Manage anthropogenic activities in Biologically Important Areas to ensure that biologically important behaviour can continue	Refer to Section 6.7.4 and Section 6.8.7 <b>Not inconsistent assessment:</b> The assessment of light emissions and potential vessel collisions has considered the potential impacts to marine turtles.  Management of the Petroleum Activities Program will ensure that biologically important behaviour can continue in BIAs.	<b>EPO 5 , EPO 12 and EPO 15</b> <b>C 4.1, 4.2, 4.3, 4.4, 4.5</b> <b>EPS 4.1, 4.2, 4.3, 4.4, 4.5</b>
	<b>Action Area A3:</b> Reduce the impacts from marine debris	<b>Action:</b> Support the implementation of the Marine Debris Threat Abatement Plan (TAP) <u>Priority actions at stock level:</u> <ul style="list-style-type: none"> <li>• G-NWS – understand the threat posed to this stock by marine debris</li> <li>• LH-WA – determine the extent to which marine debris is impacting loggerhead turtles</li> <li>• F-Pil and H-WA – no relevant actions</li> </ul>	Refer Section 6.8.5 <b>Not inconsistent assessment:</b> The assessment of accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to marine turtles.	<b>EPO 22</b> <b>C 7.1, 12.1, 11.3, 12.2</b> <b>EPS 7.1, 12.1, 11.3, 12.2</b>
	<b>Action Area A4:</b> Minimise chemical and terrestrial discharge	<b>Action:</b> Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in	Refer Sections 6.8.2, 6.8.3 and 6.8.4 <b>Not inconsistent assessment:</b> The assessment of accidental release of	Refer Section 7.19. Detailed oil spill preparedness and

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Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
		reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs <u>Priority actions at stock level:</u> <ul style="list-style-type: none"> <li>• G-NWS – ensure that spill risk strategies and response programs include management for turtles and their habitats</li> <li>• 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</li> <li>• H-WA – no relevant actions</li> </ul>	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.	response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are present in Appendix D
		<u>Action:</u> Routine discharges from project vessels and infrastructure installation are managed such that marine turtles are not adversely affected by changes in water quality. <u>Priority actions at stock level:</u> <ul style="list-style-type: none"> <li>• G-NWS – as above</li> <li>• LH-WA, F-Pil – as above</li> <li>• H-WA – no relevant actions</li> </ul>	Refer Section 6.8.3, 6.8.4 <b>Not inconsistent assessment:</b> The assessment of routine discharges of chemicals, deck drainage, treated sewage, 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.	<b>EPO 3</b> <b>C7.1, 7.2, 7.3, 7.4</b> <b>EPS 7.1, 7.2, 7.3, 7.4</b>
	<b>Action Area A8:</b> Minimise light pollution	<u>Action:</u> 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 <u>Priority actions at stock level:</u> <ul style="list-style-type: none"> <li>• G-NWS – as above</li> <li>• LH-WA – no relevant actions</li> <li>• 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</li> </ul>	Refer Section 6.7.4 <b>Not inconsistent assessment:</b> 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	<b>EPO 5 and EPO 12</b> <b>C 4.1, 4.2, 4.3, 4.4, 4.5</b> <b>EPS 4.1, 4.2, 4.3, 4.4, 4.5</b>

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Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
			internesting or nesting habitat critical to the survival of marine turtles.	
	<b>Action Area B1:</b> Determine trends at index beaches	<b>Action:</b> Maintain or establish long-term monitoring programs at index beaches to collect standardised data critical for determining stock trends, including data on hatchling production <u>Priority actions at stock level:</u> <ul style="list-style-type: none"> <li>• G-NWS – continue long-term monitoring of index beaches</li> <li>• LH-WA – continue long-term monitoring of nesting and foraging populations</li> <li>• F-Pil and H-WA – no relevant actions</li> </ul>	<b>Not inconsistent assessment:</b> Woodside contributes to Action Area B1 via its support of the Ningaloo Turtle Program <sup>40</sup> .	N/A
	<b>Action Area B3:</b> Address information gaps to better facilitate the recovery of marine turtle stocks	<b>Action:</b> Understand the impacts of anthropogenic noise on marine turtle behaviour and biology <u>Priority actions at stock level:</u> <ul style="list-style-type: none"> <li>• G-NWS – given this is a relatively accessible stock that is likely to be exposed to anthropogenic noise – Investigate the impacts of anthropogenic noise on turtle behaviour and biology and extrapolate findings from the NWS stock to other stocks</li> <li>• LH-WA, F-Pil – no relevant actions</li> <li>• H-WA – investigate mixed stock genetics at foraging grounds</li> </ul>	Refer Section 6.7.6 <b>Not inconsistent assessment:</b> The assessment of acoustic emissions has considered the potential impacts to flatback, hawksbill and green 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.	<b>EPO 11</b> <b>C 6.1, 6.8, 6.10</b> <b>EPS 6.1, 6.8, 6.10</b>
<p><b>Assessment Summary</b></p> <p>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.</p>				

<sup>40</sup> [http://www.ningalooturtles.org.au/media\\_reports.html](http://www.ningalooturtles.org.au/media_reports.html)

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**Table 6-35: Blue Whale Conservation Management Plan**

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
<b>Blue Whale Conservation Management Plan</b>	<b>Action Area A.2:</b> Assessing and addressing anthropogenic noise	<b>Action 2:</b> Assessing the effect of anthropogenic noise on blue whale behaviour <b>Action 3:</b> Anthropogenic noise in BIAs will be managed such that any blue whale continues to use the area without injury, and is not displaced from a foraging area	Refer Section 6.7.6 <b>Not inconsistent assessment:</b> The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales.	<b>EPO 11, 15</b> <b>C 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10</b> <b>EPS 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10</b>
	<b>Action Area A.4:</b> Minimising vessel collisions	<b>Action 3:</b> 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 6.8.7 <b>Not inconsistent assessment:</b> 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.	<b>EPO 25</b> <b>C 14.1, 14.2, 14.3, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10</b> <b>EPS 14.1, 14.2, 14.3, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10</b>
	<b>Action Area B.3:</b> Describing spatial and temporal distribution and defining biologically important habitat	<b>Action 2:</b> Identify migratory pathways between breeding and feeding grounds <b>Action 3:</b> Assess timing and residency within BIAs	<b>Not inconsistent assessment:</b> Woodside contributes to Action Area B3 via its support of targeted research initiatives (e.g. satellite tracking of pygmy blue whale migratory movements <sup>41</sup> ).	N/A
<b>Assessment Summary</b> 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.				

<sup>41</sup> 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

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**Table 6-36: Assessment against relevant actions of the Grey Nurse Shark Recovery Plan**

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
<b>Grey Nurse Shark Recovery Plan</b>	<b>Objective 7:</b> Improve understanding of the threat of pollution and disease to the grey nurse shark	<b>Action 7.1:</b> Review and assess the potential threat of introduced species, pathogens and pollutants	Refer Section 6.8.5 <b>Not inconsistent assessment:</b> The assessment of accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to grey nurse sharks.	<b>EPO 26</b> <b>C 15.1, 15.2</b> <b>EPS 15.1, 15.2</b>
			Refer Sections 6.8.2 and 6.8.3 <b>Not inconsistent assessment:</b> The species was identified to potentially occur within the EMBA and therefore the assessment of accidental release of hydrocarbons has considered the potential risks to grey nurse sharks.	Refer Section 7.19 Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are present in Appendix D.
<b>Assessment Summary</b> The Grey Nurse Shark Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

**Table 6-37: Assessment against relevant actions of the Sawfish and River Shark Recovery Plan**

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
<b>Sawfish and River Shark Recovery Plan</b>	<b>Objective 5:</b> Reduce and, where possible, eliminate adverse impacts on habitat degradation and modification on sawfish and river shark species.	<b>Action 5c:</b> Identify risks to important sawfish and river shark habitat and measures needed to reduce those risks	Refer Sections 6.7 and 6.8 <b>Not inconsistent assessment:</b> The species was identified to potentially occur within the EMBA and therefore the assessment of accidental release of hydrocarbons has considered the potential risks to sawfish and river shark.	Refer Section 7.19 Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the

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Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
				Petroleum Activities Program are present in Appendix D.
	<b>Objective 6:</b> Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life.	<b>Action 6a:</b> Assess the impacts of marine debris including ghost nets, fishing gear and plastics on sawfish and river shark species	Refer Section 6.8.5 <b>Not inconsistent assessment:</b> The assessment of accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to sawfish and river sharks.	<b>EPO 22</b> <b>C 7.1, 12.1, 11.3, 12.2</b> <b>EPS 7.1, 12.1, 11.3, 12.2</b>
<b>Assessment Summary</b> The Sawfish and River Shark Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

**Table 6-38: Assessment against relevant Marine Debris Threat Abatement Plan**

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
<b>Marine Debris TAP</b>	<b>Objective 1:</b> Contribute to long-term prevention of marine debris.	<b>Action 1.02:</b> Limit the amount of single use plastic material lost to the environment in Australia.	Refer Section 6.8.5 <b>Not inconsistent assessment:</b> The assessment of accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to vertebrate wildlife.	<b>EPO 22</b> <b>C 7.1, 12.1, 11.3, 12.2</b> <b>EPS 7.1, 12.1, 11.3, 12.2</b>
<b>Assessment Summary</b> The Marine Debris Threat Abatement 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.				

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### 6.9.4 Australian Marine Parks

The objectives of the North-west Marine Parks Management Plan are:

- a) The protection and conservation of biodiversity and other natural, cultural and heritage values of marine parks in the North-west Network; and
- b) Ecologically sustainable use and enjoyment of the natural resources within marine parks in the North-west Network, where this is consistent with objective (a)

The specific values of the marine parks have been provided in Appendix H and Table 4-21.

Table 6-39 list the values of the relevant marine parks and an evaluation has been conducted as to whether impacts and risks resulting from the activity are not inconsistent with the objectives of the North-west Marine Parks Management Plan

**Table 6-39: Assessment against the designated values of the Montebello and Dampier Marine Park**

AMP	Designated values*	Evaluation
Montebello Marine Park	<b>Natural values</b>	
	Ancient Coastline at 125m Depth Contour KEF	Refer to Section 6.7.3, 6.7.2, 6.8.2 and 6.8.6 <b>Not inconsistent assessment:</b> The assessment of impacts to the Ancient Coastline at 125 m Depth Contour KEF determined impacts are expected to be no more than slight and any potential disturbance will only occur in a small portion of the KEF (<0.0004 km <sup>2</sup> ) where the trunkline will intersect with the KEF. Therefore, the activities will allow for the protection and conservation of the ancient coastline at 125 m depth contour KEF within the marine park. Given the planned activities are consistent with the objectives of the Multiple Use Zone and do not infringe on the protection and conservation of the KEF, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	Humpback whale migration BIA	Refer to Section 6.7.6, 6.8.2 and 6.8.7 <b>Not inconsistent assessment:</b> The assessment determined that the identified planned activities and associated magnitude of potential impacts to humpbacks would be limited to a slight, short term impact and not expected to have a substantial adverse effect on the population, or the seasonal migration of humpbacks. Given the planned activities are consistent with the objectives of the Multiple Use Zone and do not infringe on the protection and conservation humpback whales, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	Wedge tailed shearwater breeding BIA	Refer to Section 6.7.4 and 6.8.2 <b>Not inconsistent assessment:</b> The assessment determined that the magnitude of a potential impact to Wedge-tailed shearwaters would be limited to a slight, short term impact and not expected to have a substantial adverse effect on the population, or affect the emergence of fledgling wedge-tailed shearwaters. Given the planned activities are consistent with the objectives of the Multiple Use Zone and do not infringe of the protection and conservation of wedge tailed shearwaters, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.

AMP	Designated values*	Evaluation
	Internesting, foraging, mating and nesting for marine turtle (Flatback and green turtles)	Refer to Sections 6.7.3, 6.7.4, 6.7.5, 6.7.6, 6.8.2 and 6.8.7 <b>Not inconsistent assessment:</b> The assessment determined that the magnitude of a potential impact to marine turtles would be limited to a slight, short term impact and not expected to have a substantial adverse effect on the population, or important life cycle stages of marine turtles such as hatchling emergence or internesting by adult females. Given the planned activities are consistent with the objectives of the Multiple Use Zone and do not infringe of the protection and conservation of marine turtles, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	Whale shark foraging BIA	Refer to Sections 6.7.4, 6.7.6, 6.8.2 and 6.8.7 <b>Not inconsistent assessment:</b> The assessment determined that the magnitude of a potential impact to whale sharks as a temporary deviation on their migration route, which covers a wide area and is not spatially restricted. All predicted impacts would be limited to a slight, short term impact and not expected to have a substantial adverse effect on the population, or important behaviour such as foraging or migrating. Given the planned activities are consistent with the objectives of the Multiple Use Zone and do not infringe of the protection and conservation of whale sharks, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	Diverse fish communities	Refer to Sections 6.7.5, 6.7.6 and 6.8.2 <b>Not inconsistent assessment:</b> The assessment determined potential impacts to fish would be limited to a magnitude of a slight, short term impact and not expected to have a substantial adverse effect on the population, or spatial distribution of fish. Given the planned activities are consistent with the objectives of the Multiple Use Zone and do not infringe of the protection and conservation of the fish communities, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	Diverse benthic communities (including Trial rocks)	Refer to Section 6.7.3 (trunkline installation) <b>Not inconsistent assessment:</b> The assessment determined potential impacts to benthic communities would be limited to a magnitude of a slight, short term impact (represents 0.07% of the Montebello Marine Park, including the area intersecting the Ancient Coastline KEF) and will not modify a substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results. Therefore, given the planned activities are consistent with the objectives of the Multiple Use Zone and do not infringe on the protection and conservation of benthic habitats, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
<b>Heritage values</b>		
	Two known shipwrecks – Trial and Tanami	Refer to Section 4.9.1.8 Trial and Tanami wrecks are more than 10 km from the Operational Area therefore there are no expected impacts to heritage values of the Marine Park
<b>Cultural values</b>		
	Table 4-21—described the cultural values of the marine park, noting that cultural values may be intrinsically linked to natural values identified above.	The evaluation of the potential impacts and risks from the Petroleum Activities Program to natural values as demonstrated above predicts only slight, short term impacts which do not infringe of the overall protection and conservation of the natural values of the Montebello Marine Park and are consistent with the objectives of the Multiple Use Zone. Therefore, cultural values of the Montebello marine park, which may be intrinsically linked to

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AMP	Designated values*	Evaluation
		the natural values, will also be protected. The activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	<b>Social and economic values</b>	
	Tourism, commercial fishing, mining and recreation	Refer Section 6.7.1 <b>Not inconsistent assessment:</b> Any displacement of tourism, commercial fishing, mining and recreation will be temporary with no lasting effect. Therefore, the planned activities are consistent with the objectives of the Multiple Use Zone and allow for the ecologically sustainable use and enjoyment of the natural resources in the marine park. Therefore, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	<b>Natural values</b>	
	Diverse benthic communities (including sponge biodiversity)	Refer Sections 6.7.2 <b>Not inconsistent assessment:</b> The assessment determined that there are no predicted impacts to benthic communities within the AMP. Therefore, the activities will allow for the protection and conservation of the diverse benthic communities and the activity is not inconsistent with the objectives of North-west Marine Parks Management Plan.
	Diverse fish communities	Refer to Section 6.8.2 <b>Not inconsistent assessment:</b> The assessment determined potential impacts to fish from a hydrocarbon release would be limited to a magnitude of a slight, short term impact and not expected to have a substantial adverse effect on the population, or spatial distribution of fish. In the highly unlikely event of a hydrocarbon spill, the activity does not infringe of the protection and conservation of the fish communities, therefore the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
Dampier Marine Park	Breeding and foraging BIA for shearwaters	Refer to Sections 6.7.4 and 6.8.2 <b>Not inconsistent assessment:</b> The assessment determined that the magnitude of a potential impact to shearwaters would be limited to a slight, short term impact and not expected to have a substantial adverse effect on the population, or spatial distribution of shearwaters. Given the activities do not infringe of the protection and conservation of wedge tailed shearwaters, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	Humpback whale migration BIA	Refer to Section 6.7.6 and 6.8.7 <b>Not inconsistent assessment:</b> The assessment determined that the identified planned activities and associated magnitude of potential impacts to humpbacks would be limited to a slight, short term impact and not expected to have a substantial adverse effect on the population, or the seasonal migration of humpbacks. Given the activities do not infringe on the protection and conservation humpback whales, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	Internesting habitat for marine turtles	Section 6.7.2, Section 6.7.4, Section 6.7.6 and 6.8.7 <b>Not inconsistent assessment:</b> The assessment determined that the magnitude of a potential impact to marine turtles would be limited to a slight, short term impact and not expected to have a substantial adverse effect on the population, or important life cycle stages of marine turtles such as hatchling emergence or internesting by adult females. Given the activities do not infringe of the protection and conservation of marine turtles, the activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.

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AMP	Designated values*	Evaluation
	<b>Cultural value</b>	
	Table 4-21—described the cultural values of the marine park, noting that cultural values may be intrinsically linked to natural values identified above.	<b>Not inconsistent assessment:</b> The evaluation of the potential impacts and risks from the Petroleum Activities Program to natural values as demonstrated above predicts only slight, short term impacts which do not infringe of the overall protection and conservation of the natural values of the Dampier Marine Park. Therefore, cultural values of the Dampier Marine Park, which may be intrinsically linked to the natural values, will also be protected. The activity is viewed as not inconsistent with the objectives of North-west Marine Parks Management Plan.
	<b>Heritage values</b>	
	No known heritage values known	N/A
	<b>Social and economic values</b>	
Port activities, commercial fishing and recreation	No activities will occur in the AMP therefore there are no expected impacts to the social and economic values of the marine park.	

## 6.10 Cultural Features and Heritage Values Assessment

As described in Section 4, the identification of cultural features and heritage values of the environment as well as the social, economic and cultural features important to First Nation’s people is integral to understanding the environment and any potential impacts and risks to the environment.

In line with Woodside’s First Nations Communities Policy (Woodside 2022), Woodside seeks to avoid damage or disturbance to cultural heritage (including intangible heritage) and, if avoidance is not possible, minimise and mitigate the impacts, in consultation with First Nation communities and Traditional Custodians. Mitigation can include any measure or control aimed at ensuring the viability of the intangible cultural heritage and its intergenerational transmission. This can include reducing impacts and risks to environmental features that are associated with intangible cultural heritage (UNESCO 2003; ICOMOS 2013).

It is important to note that not all topics raised by First Nations groups / individuals through consultation are considered values for the purpose of the cultural features and heritage values impact assessment below. A number of topics were raised in the context of a general interest in environmental management and ecosystem health (i.e., natural environment interest), where the group/individual was seeking further information about potential impacts and risks from the Petroleum Activities Program on a receptor. As these interests relate to the maintenance of the natural environment, these are adequately addressed through impact and risk assessments described in Sections 6.7 and 6.8 respectively and not further assessed below.

Aspect	Cultural Features and Heritage Values
<b>Description of source impact/ risk (key aspects)</b>	<p><b><i>Physical presence of vessels</i></b></p> <p>Several vessel types will be required to complete the activities associated with the Petroleum Activities Program (refer to Section 3.9.2). The physical presence and movement of project vessels within the Operational Area has the potential to displace other marine users.</p> <p>Vessel physical presence and movement closer to the Dampier Archipelago and the Pilbara Port Authority Management Area is limited to activities along the trunkline route, the cycling of dredging and backfill between the Offshore Borrow Ground Project Area and Trunkline Project Area, and disposal of material in Spoil Ground 5A. These activities will be conducted over a period of months, and vessels will be continually moving. PV will move at a rate of around 3km per day. Temporary exclusion zones will be established around operating vessels. Refer to <b>Section 6.7.1</b> for more details.</p> <p><b><i>Light emission from vessels</i></b></p> <p>Project vessels will have external lighting to support safe operations at night, as well as to communicate the presence and activities of project vessels to other marine users (i.e. navigational lights). This lighting typically consists of bright white (i.e. metal halide, halogen, fluorescent) lights, and is not dissimilar to lighting used for other offshore activities, including fishing and shipping. Lighting is required for the safe operation of the project vessels and cannot reasonably be eliminated.</p> <p>Project vessel light emissions in any one area will be limited by the transient nature of the works along the trunkline route and the cycling of dredging and backfill between the Offshore Borrow Ground Project Area, Trunkline Project Area and disposal of material in Spoil Ground 5A. Refer to <b>Section 6.7.4</b> for more details.</p> <p><b><i>Acoustic emissions from vessels</i></b></p> <p>There are various sources of underwater acoustic emissions during the Petroleum Activities Program including survey activities, underwater positioning equipment, helicopter operations, seabed disturbance (i.e. rock placement and seabed trenching); however the most significant noise emitter will be vessel operations themselves.</p> <p>The sound levels and frequencies generated by vessels varies with the size of the vessel, speed, engine type and the activity being undertaken. Large vessels typically produce higher sound levels at lower frequencies than small vessels, although significant variation may be found among vessels within the same group. Sound levels tend to be greatest when engaging the throttle or</p>

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thrusters, such as use of DP or when vessels are operating under load, compared with slow moving or idling vessels.

The greatest sound levels are likely to be associated with vessels using DP thrusters to maintain position on station. For example, the deepwater PV, TSHD and OCV will operate on DP and support and supply vessels may also engage thrusters when working alongside. Refer to **Section 6.7.6** for more details.

#### **Seabed disturbance**

- Trunkline trenching and spoil disposal: will occur within the Trunkline Project Area and may result in seabed disturbance between the State Waters boundary (approximately KP 32) to a maximum of KP39 (including Spoil Ground 5A). Trenching out to KP50 is considered a contingency only that has been impact and risk assessed under the EP. Trenching works involves dredging a trench about 2 to 3.5 m deep within the indicative trunkline disturbance corridor (~30 m width). Sediment will be placed within Spoil Ground 5A, which is a previously disturbed spoil ground. Expected disturbance area is 0.24 km<sup>2</sup> for trenching and backfill, and 1.6 km<sup>2</sup> for spoil disposal.
- Offshore borrow ground dredging and Trunkline backfill: After the installation of the trunkline in the trench, backfilling with dredged material from the Offshore Borrow Ground will be required to help stabilise the trunkline. Backfill material will be dredged and placed using a TSHD. Dredging within the offshore borrow ground is expected to result in a seabed disturbance area of around 4 km<sup>2</sup> (with maximum allowable disturbance area of 17 km<sup>2</sup> based on the entire borrow ground being disturbed, which is not anticipated).
- Trunkline installation: The Trunkline is dual diameter, with the diameter between the State Waters boundary and ~KP200 being nominal 36" and the remainder of the Trunkline to the FPU being nominal 32" diameter. From the shore to around ~KP160, the Trunkline will be routed alongside the existing Pluto gas trunkline (about 100 m to the south). The PV will install the pipeline end termination (PLET) at the end of the Trunkline and position it on top of pre-installed foundations. Expected disturbance area for the trunkline and ancillary structures is around 2.07 km<sup>2</sup>.
- Pipeline and infrastructure crossings: the Trunkline route crosses existing subsea infrastructure including pipelines, flexible flowlines, umbilicals and fibre optic cables, which will require the installation of crossing supports using rock or concrete mattresses. Three crossings lie within the Montebello AMP Multi Use Zone. Expected disturbance area from pipeline and infrastructure crossings is around 0.06 km<sup>2</sup>.
- Continental Slope Crossing Seabed Preparation: At about KP 209 of the Trunkline route, seabed material will be excavated and/or displaced over a length of approximately 150 m within a 300 m corridor (excluding placement of excavated material), which will allow appropriate pipeline span lengths. Expected disturbance area from continental slope crossing seabed preparation is about 0.10 km<sup>2</sup>.

Refer to Section 6.7.3 for more details.

#### **Unplanned hydrocarbon release from vessel (basis of EMBA)**

The temporary presence of the project vessels in the Operational Area may result in a navigational hazard for commercial shipping within the immediate area. This navigational hazard could result in a third-party vessel colliding with the project vessels which could result in a loss of containment. Project vessels typically have multiple isolated tanks and the largest volume of a single tank for these types of vessels is in the order of 250 m<sup>3</sup> (for survey vessels, support vessels and pipe transport vessels) to 2000 m<sup>3</sup> (for a refuelling vessel).

The EMBA is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding environment. For this EP, the EMBA is the potential spatial extent of surface and in-water hydrocarbons at concentrations above ecological impact thresholds, in the highly unlikely event of the worst-case credible spill (2,000 m<sup>3</sup>) modelled at three key locations. The EMBA therefore covers a larger area than the area that would be affected during any one single spill event. In the event of a spill the EMBA would be much smaller and is intermittent e.g., plume travels away from the release location based on prevailing currents and winds directions.

The EMBA is driven by the distribution of entrained hydrocarbon above ecological thresholds and hence although Islands such as Barrow and Montebello Islands are within the EMBA, these are not expected to be affected unless there is shoreline contact above thresholds. Shoreline contact

was only predicted at the outer Islands of the Dampier Archipelago (namely Lady Nora Island, Brigadier Island, Legendre Island and Cohen Island) and Barrow Island. Noting that the maximum local accumulated concentration on shorelines is 156 g/m<sup>2</sup> forecast at Dampier Archipelago and contact at Barrow Island is below the ecological threshold of 100 g/m<sup>2</sup>. Refer to Section 6.8.2 for more details.

**Receptor sensitivity**

Cultural features and heritage values: High value

Marine mammals: High value species

Marine reptiles: High value species

Fish: High value species

Seabirds: High value species

Coral: High value habitat

Seagrass: High value habitat

Mangroves: High value habitat

**Planned Activity Aspect**

*The potential environmental impact from the Petroleum Activities Program to species that have a cultural feature or heritage value have been summarised below to provide the context related cumulative impact on the cultural feature or heritage value.*

**Impact Significance Level**

Environmental impact assessment to marine species	Marine mammals	Marine reptiles	Fish	Seabirds	Coral	Seagrass	Mangroves
6.7.2 Physical Presence – Seabed Disturbance (trenching, spoil disposal, borrow ground dredging and Trunkline backfill)	N/A	Minor (D)	Slight (E)	N/A	Slight (E)	N/A	N/A
6.7.3 Physical Presence – Seabed Disturbance (Intervention and Trunkline Installation)	N/A	Minor (D)	N/A	N/A	N/A	N/A	N/A
6.7.4 Routine Light Emissions from Project Vessels	N/A	Slight (E)	N/A	Slight (E)	N/A	N/A	N/A
6.7.6 Routine Acoustic Emissions	Slight (E)	Slight (E)	Slight (E)	N/A	N/A	N/A	N/A
6.7.7 Routine and Non-Routine Discharges – Vessels and Seabed Intervention	Slight (E)	Slight (E)	Slight (E)	N/A	N/A	N/A	N/A
6.7.8 Routine and Non-Routine Discharges – Trunkline Installation and Pre-commissioning	Slight (E)	Slight (E)	Slight (E)	N/A	N/A	N/A	N/A

**Unplanned Activity Aspect**

*The potential environmental risk from the Petroleum Activities Program to species that have a cultural feature or heritage value have been summarised below to provide the context related cumulative risk on the cultural feature or heritage value.*

		Risk Rating						
Environmental risk assessment to marine species		Marine mammals	Marine reptiles	Fish	Seabirds	Coral	Seagrass	Mangroves
6.8.2	Unplanned Hydrocarbon Release – Vessel Collision	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Low
6.8.3	Unplanned Hydrocarbon Release – Bunkering	Low	Low	Low	N/A	N/A	N/A	N/A
6.8.4	Unplanned Discharge – Deck and Subsea Spills	Low	Low	Low	Low	N/A	N/A	N/A
6.8.5	Unplanned Discharge – Hazardous and Non-Hazardous Solid Waste / Equipment	Low	Low	Low	Low	N/A	N/A	N/A
6.8.7	Physical Presence (Unplanned) – Interaction with Marine Fauna	Low	Low	Low	N/A	N/A	N/A	N/A

<b>Impact and Risk Assessment</b>	<p>The Petroleum Activities Program has the potential impact cultural features and heritage values through the following ways:</p> <p>Archaeological heritage:</p> <ul style="list-style-type: none"> <li>Places that are identified in the literature for their value as archaeological sites can be assumed to be impacted where there is an impact to the archaeological or scientific values of its tangible elements. This could include damage or disturbance of archaeological material or to the archaeological context.</li> </ul> <p>Intangible cultural heritage:</p> <ul style="list-style-type: none"> <li>Songlines: Songlines can become lost, fragmented, or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020:30). Physical sites that have been identified as comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. It is noted that oil and gas infrastructure exists in many areas of the North West Shelf, and that songlines are still acknowledged and recognised. It is inferred that if there were to be any impacts to surviving songlines these would be significantly more likely to be described as qualitative (i.e. “weaken” a songline) rather than binary or absolute (i.e. destroy a songline).</li> <li>Creation/dreaming sites; sacred sites; ancestral beings: Activities that physically alter landscape features may be assumed to potentially impact values of creation/dreaming sites, sacred sites or ancestral beings.</li> <li>Ceremonial sites: Activities that prevent the performance of ceremony at these sites will directly impact its values.</li> <li>Cultural obligations to care for Country: Environmental impacts may be assumed to impact rights and obligations to care for Sea Country. Exclusion of Traditional Custodians from Sea Country (e.g., by restricting access) or decision-making processes (e.g., by not conducting ongoing consultation) are other potential sources of impact.</li> <li>Knowledge of Country/customary law and transfer of knowledge: Direct impact to communities practicing these skills will inherently occur when relevant aspects of the environment disappear, are displaced or suffer a reduction in population. Therefore, the transmission of these skills is expected to be impacted where there are impacts at the species/population</li> </ul>
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level. Limitations on access to sites or disruption/relocation of First Nations communities may have implications for the preservation of First Nations knowledge.

- Connection to Country: Where people are displaced or disrupted (e.g., during colonisation) or where there is a loss of technical skills or environmental knowledge this may damage connection to Country (McDonald and Phillips, 2021).
- Access to Country: Impacts to access to Country may be classified as temporary (e.g. where exclusion zones exist around activities for safety reasons) or permanent (e.g. where infrastructure obstructs access or navigation). Impacts to access to Country can only occur in areas that were traditionally accessed by Traditional Custodians. As described in Section 4.9.1.3 this is anticipated to be focussed on areas adjacent to the coast.
- Kinship systems and totemic species: It is assumed that marine species may have kinship/totemic relationships to Traditional Custodians, but it is understood that these relationships do not prohibit people outside of that “skin group” from hunting or eating that same species (Juluwarlu 2004). It is therefore inferred that the management of totemic or kinship species applies at the species/population level and not to individual plants and animals.
- Resource collection: Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, marine species (as resources) will be impacted where there is an impact at the species/population level.

Marine ecosystems and species:

- Marine ecosystems may hold both cultural and environmental value (see Section 4.9.1), with cultural and environmental values intrinsically linked (DCCEEW 2023, MAC 2021 as cited in Woodside 2023a). It necessarily follows that an impact to marine ecosystems has the potential to impact cultural features where the impact is detectable within sea country—the seascape which Traditional Custodians view, interact with or hold knowledge of.

### **Archaeological Heritage**

#### Onshore / intertidal archaeological sites

No coastal areas or islands exist within the Operational Area. A review of the of DPLH’s Aboriginal Heritage Inquiry System identified 54 Registered Aboriginal Sites and 40 Other Heritage Places in the EMBA. These were mainly comprised of sites at Barrow Island, Dampier Archipelago and the Ningaloo coast. These locations do exist within the EMBA boundary, however given the EMBA is driven by an unplanned marine diesel spill there is no anticipated impact pathway from this activity to onshore archaeological sites above highest astronomical tide (HAT).

Archaeological sites may exist in intertidal landscapes within the EMBA and may be exposed to marine diesel from an unplanned spill, however there is no anticipated impact pathway from the presence of marine diesel on archaeological values, as this is not expected to impact the fabric or context of sites on an exposed shoreline site. Impacts to the heritage value of fish traps from marine diesel in an unplanned spill may occur indirectly through impacts to fish. However, it is expected that continued use of fish traps beyond their archaeological value will be preserved where fish species and distribution are maintained at a population level. With regard to fish, refer to species specific assessment below for further information, in addition to the impact and risk assessment in Sections 6.7 and 6.8 respectively.

#### Submerged archaeological sites

No archaeological sites have been identified beyond terrestrial or intertidal areas, with the exception of two sites at Murujuga in Cape Bruguieres channel and Flying Foam Passage (Benjamin et al. 2020; Benjamin et al 2023), which are outside of the EMBA. Nevertheless, there is the potential for submerged archaeological sites on the Ancient Landscape. Assessments of the Operational Area, detailed in Section 4.9.1, have not identified any archaeological sites on the Ancient Landscape. Additionally, volcanic rock which may contain petroglyphs do not occur within the Operational Area. There is the potential (albeit low risk) that submerged archaeological sites may exist in unassessed areas of the Offshore Borrow Ground, and as such additional controls have been adopted to mitigate the risk of disturbance to unidentified UCH.

Submerged archaeological sites (locations undefined) may exist on the Ancient Landscape within the broader EMBA. However, given the EMBA is driven by an unplanned marine diesel spill, it is not expected to impact the seabed or archaeological material on or within it. Therefore, there is no anticipated impact pathway to submerged archaeological sites in the broader EMBA from the Petroleum Activities Program.

Rivers, waterholes, tidal channels and seeps

Assessments detailed in Section 4.9.1.5.2 have not identified any active or former freshwater sources within the Operational Area. There are no known significant freshwater systems within the EMBA. Oceanographic studies indicate that both the open ocean and coastal zone off Western Australia are well-mixed and saline. Submerged former water sources (e.g. river beds) may exist within the EMBA which are archaeologically prospective or culturally significant.

It has been asserted that locations where saltwater and freshwater meet “are where the biggest energy lines are”. Energy lines are understood by Woodside to be the same as songlines which are addressed below. The EMBA is driven by an unplanned marine diesel spill, which is not expected to impact the seabed or features on it. As such, there is no anticipated impact pathway from this activity to submerged water sources in the broader EMBA. In the highly unlikely and unmitigated worst case, unplanned marine diesel release may contact shorelines and receptors such as mangroves, and shoreline habitats. These habitats may contain brackish or fresh water due to runoff from land. Given hydrocarbon characteristics, rapid weathering, the low predicted volume ashore (3 m<sup>3</sup>), an unplanned release is expected to have no lasting effect on any freshwater sources along the shoreline.

Submerged calcarenite ridges/paleo beach barrier systems

Calcarenite ridges have been identified within the Operational Area, as detailed in Section 4.5.2. These features on the “mid shelf” identified in UWA (2021) are considered to predate human occupation of the Australian continent and therefore are not expected to contain archaeological material within it. Features on the “outer shelf” may contain archaeological material, but it was determined that “landforms and features that were identified on the seabed as having a higher probability of hosting indigenous UCH [underwater cultural heritage] ... have not been identified within the proposed pipeline route.” There is also no planned dredging or large-scale seabed disturbance of calcarenite features that may expose archaeological material within the Operational Area. Further there is no anticipated impact pathway to calcarenite ridges in the broader EMBA from the Petroleum Activities Program.

Submerged hills

Assessments detailed in Section 4.9.1 have not identified submerged hills within the Operational Area, however submerged hills have been identified in the broader EMBA. These features on the “mid shelf” identified in UWA (2021) may be archaeologically prospective or culturally significant. The EMBA is driven by an unplanned marine diesel spill, which is not expected to impact the seabed or features on it. There is no anticipated impact pathway to submerged hills in the broader EMBA from the Petroleum Activities Program.

Madeleine Shoals

Madeleine Shoals is a potentially archaeologically prospective location found outside the Operational Area. There are no planned activities that would result in direct seabed disturbance and while the Zone of Influence (Zol) from borrow ground dredging activity extends beyond the Operational Area there is no overlap with the seaward slopes around Madeleine Shoals. Further, the Zol represents a change in water quality but no impacts to benthic communities and habitats. As such, there is no anticipated impact pathway from this activity to archaeological features from changes in water quality.

While Madeleine Shoals is within the EMBA, this is driven by an unplanned marine diesel spill, and as such is not expected to impact the seabed or archaeological features on it. Therefore, there is no anticipated impact pathway to potentially archaeologically prospective sites at Madeleine Shoals from the Petroleum Activities Program.

Karst depressions/ravines and valleys between submerged ridges

Assessments detailed in Section 4.9.1 have not identified Karst depressions or other “catch points” within the Operational Area. Catch points have the potential to contain artefacts displaced by erosion during inundation which may be impacted by seabed disturbance. No planned seabed disturbance will occur outside the Operational Area.

**General Intangible values**

Songlines

Management of intangible cultural heritage can include reducing impacts and risks to environmental features that are associated with intangible cultural heritage (UNESCO 2003; ICOMOS 2013). Impacts to marine plants, animals and other cultural features associated with songlines might impact the intergenerational transmission of knowledge of songlines when individuals can no longer witness or interact with the cultural features tied to songlines on Country. Therefore, managing songlines may require environmental controls protecting species at a population level, including migratory routes. Refer to species specific assessment below for further information, in addition to the impact and risk assessment in Section 6.7 and 6.8 respectively.

Physical features comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. Songlines can become lost, fragmented, or broken when there is a loss of Country or impact to culturally important physical features (Neale and Kelly 2020:30). No specific details of songlines within the EMBA have been provided by relevant persons during consultation for this Activity, and no landforms typical of songlines (e.g. mountains, rivers, caves and hills (Higgins 2021)) are anticipated to be impacted by the Activity.

In publicly available literature, Murujuga is acknowledged as a starting point for songlines, including the flying fox songline (MAC 2023a). Precise location of this songline, and features of this songline that might be impacted, are not clearly articulated in the reviewed sources, but it is stated that “the sea is a source of creation for flying foxes” (DEC 2013). Although this does not provide the specificity required to determine the location of the flying fox songline or associated sites, Murujuga is located outside of the EMBA. Ethnographic survey (Section 4.9.1.5.2) also noted that “Dreamtime narratives... that commence at Murujuga and may also arrive from the sea including the... Bat (Flying Fox)” (McDonald and Phillips 2021). The ethnographic survey did not identify any sites within the EMBA related to songlines or make recommendations that any mitigations were required to manage songlines. Consultation with MAC and other Traditional custodians has not identified the flying fox songline as overlapping the EMBA, and flying foxes do not occur within the EMBA.

An ethnographic survey also noted “Dreamtime narratives... that commence at Murujuga and may also arrive from the sea including the *Marlu* (Plains Kangaroo)” (McDonald and Phillips 2021). Kearney et al (2023) notes a connection between the Kangaroo songline and a pair of submerged waterholes identified through seabed mapping by the Deep History of Sea Country project, which later found submerged artefacts in Flying Foam passage. Assessments detailed in Section 4.9.1.5.2 have not identified any active or former freshwater sources within the Operational Area that may connect to the Kangaroo or other songlines. Other terrestrial species with narratives originating or potentially originating from the sea at Murujuga noted by McDonald and Phillips (2021) include *Tarnguna* (Emu) and *Jugurru* (Dingo). The ethnographic survey did not identify any sites within the EMBA related to any songlines, or make recommendations that any mitigations were required to manage songlines. Consultation with MAC and other Traditional custodians has not identified these songlines as overlapping the EMBA, and these species do not occur within the EMBA.

In publicly available literature, Murujuga is acknowledged as the starting point for the seven sisters songline (Bainger 2021). Precise location of this songline, and features of this songline that might be impacted, are not clearly articulated in the reviewed sources, however Murujuga is located outside of the EMBA. Ethnographic survey (Section 4.9.1.5.2) also noted that “a number of Dreamtime narratives... extend from the waters around Murujuga on to country, including the KurriKurri (Seven Sisters)” (McDonald and Phillips 2021). The seven sisters story is associated with Whitnell [sic] Bay, Murujuga, Depuch Island and Port Hedland, all being outside of the EMBA (McDonald and Phillips 2021). The ethnographic survey did not identify any sites within the EMBA related to songlines or make recommendations that any mitigations were required to manage songlines. Consultation with MAC and other Traditional custodians has not identified the seven sisters songline as overlapping the EMBA.

The existence of a whale songline potentially intersecting the EMBA has also been asserted by members of Save Our Songlines. Consultation with this group and associated individuals has not provided detail on the presence, features or route of this songline. It is assumed (from information provided by this group) that whales as an environmental receptor are a feature of this songline; the environmental impacts and risk on whales are assessed in Sections 6.7 and 6.8. The most detailed description available to Woodside is asserted in the Concise Statement and Affidavit filed by ██████████ in the context of Scarborough seismic activities. Specifically, “whales carry important songlines, the whale dreaming, and connection between land and sea.” Specific details regarding the whale dreaming story are provided in Table 4-26. In summary, the whale dreaming story relates to transmission of knowledge and connection between environment and people, the women’s lore and connection to whales through their heart centre and obligation to care for country. It is stated that “because each animal uses songlines for migration, breeding and feeding, the disruption or distortion to the songlines causes the animals to become disoriented, confused or lost.” Further, that the whale’s songline creates a path for other fauna to follow.

It is therefore expected that the whale songline has the potential to be affected by the Petroleum Activities Program where there are impacts to whales at a population level, including disruption of migration routes, permanent displacement of whales and population decline, that result in discontinuation of story/transmission of knowledge, interruption of caring for Country activities, interruption of whale caretaker/midwife behaviour and interruption to performance of song/ceremony onshore. Given potential impacts to whales are limited to behavioural disturbance to transient individuals, which are not considered to be ecologically significant at a population level, the whale songline and associated whale dreaming story is not anticipated to be affected by the Petroleum

Activities Program. Note further assessment of intangible values and marine mammals are provided below, in addition to the impact and risk assessment in Section 6.6 and 6.7 respectively..

Creation/dreaming sites; sacred sites; ancestral beings

Woodside has undertaken all reasonable steps to identify creation and dreaming sites, and places associated with ancestral beings within the EMBA. No such sites have been identified. A review of relevant literature has been undertaken which has identified creation, dreaming and ancestral narratives related to the sea more broadly without confirming where (if anywhere) these overlap the EMBA. These references are of a general nature, and do not identify any features or values requiring specific protection or management from the proposed activities.

Sea serpents or water serpents are common in Aboriginal creation narratives, and several references were identified in the reviewed literature. The majority of these refer to serpents residing within inland rivers or pools outside of the EMBA (Barber and Jackson 2011, Dury v Western Australia [2018] FCA 1849, Hayes v Western Australia [2008] FCA 1487, Juluwarlu 2004, Kalbarri Visitor Centre 2023, Water Corporation 2019). In some versions, the serpent originates from the sea or coast and creates the rivers as it heads inland. Barber and Jackson (2011) also recount a story where a freshwater serpent pushes a sea serpent back into the ocean where it presumably continues to reside. This does not provide the specificity required to determine the location of sea serpents within the sea, and it is possible that the ocean as a whole (out to and beyond other continents) should be viewed generally as housing the sea serpent(s). Consultation with Traditional Custodians and ethnographic surveys have not identified activities of this Petroleum Activities Program as having an impact on sea serpents. However, by analogy to other water serpent narratives across Australia, possible impact pathways may include interruption of its path by blocking or reducing flows of water, damaging sacred sites such as thalu or rock art sites or depleting water sources.

No impacts to water flows (either tidal movement or ocean currents) or depletion of water sources are anticipated from this Petroleum Activities Program. Features of the landscape with the potential for connection to creation/dreaming stories and ancestral beings were noted within the EMBA—notably nearshore submerged waterways and hills in the “mid shelf” identified by UWA (2021). However, there are no anticipated impact pathways to submerged landscape features within the broader EMBA from the Petroleum Activities Program.

Ceremonial sites

All mentions of active ceremonial sites were confined to onshore locations and no direct impacts to onshore ceremonial sites are anticipated from the Petroleum Activities Program. However, indirect impacts may occur where ceremonies cannot be performed due to limitations on access, loss of knowledge or impacts to the environment, which are further described below.

Cultural obligations to care for Country

Caring for Country collectively refers to the cultural obligations of individuals and groups, as well as rituals and ceremonies required for the physical and spiritual health of the environment. Lack of access to coastally located cultural sites that carry songlines or remain ceremonially important can impact First Nations people’s livelihoods and impact their ability to carry out cultural obligations on Country. While there is potential for shoreline accumulation of hydrocarbons within the EMBA, relevant cultural authorities will be engaged in the event of a spill that may affect them, as specified in Appendix D.

Knowledge of Country/ customary law and transfer of knowledge

Cultural knowledge about Sea Country/customary law and the intergenerational transmission of knowledge are important values identified through consultation, assessments and the literature review.

Transfer of knowledge includes continuing traditional practices to pass on practical skills. No traditional practices conducted within the EMBA have been identified.

Direct impact to communities practicing these skills will inherently occur when relevant aspects of the environment disappear, are displaced or suffer a reduction in population—for example traditional fishing methods require the survival of traditional fish resources. Therefore, ensuring the transmission of cultural knowledge may require environmental controls protecting species and migratory pathways at a population level. Refer to species specific assessment below for further information, in addition to the impact and risk assessment in Section 6.6 and 6.7 respectively.

Connection to Country

Connection to Country describes the multi-faceted relationship between First Nations people and the landscape, which is envisioned as having personhood and spirit. Connection to Country may be damaged where people are displaced or disrupted (e.g. during colonisation) or where there is a loss of technical skills or environmental knowledge (McDonald and Phillips, 2021). No impacts of this nature are considered to arise from this Petroleum Activities Program. Access to Country is discussed below.

### Access to Country

Access to Country, including Sea Country, is necessary for the continuation of other values including caring for Country and the transfer of traditional knowledge. Access is also a value in its own right, as a continuation of traditional Sea Country access and use.

Access to areas within the Operational Area may be limited where exclusion zones are established around vessels for safety purposes. Exclusion zones around seabed intervention and trunkline installation activities are temporary, and the presence of subsea infrastructure are not anticipated to affect navigation, particularly given the water depth within the Operational Area. Access to country within the EMBA would be limited to temporary exclusion in areas where there are hydrocarbons present, including shoreline accumulation. However relevant cultural authorities will be engaged in the event of a spill that may affect them, as specified in Appendix D.

### Kinship systems and totemic species

Individuals may have kinship to specific species (Smyth 2008, Juluwarlu 2004) and/or a responsibility to care for species (Muller 2008). These relationships are understood to impose obligations on Traditional Custodians. It is understood that these obligations do not impose restrictions on other people generally, but it is considered that impacts to species at a population level may inhibit Traditional Custodians with kinship relationships' ability to perform their obligations where this results in reduced or displaced populations. It is therefore considered that the management of totemic or kinship species applies at the species/population level and not to individual plants and animals. As such, impacts to individual marine fauna is not expected to impact on the totemic or kinship cultural connection.

Totemic species identified during consultation include whales, fish, stingrays and octopuses. Refer to species specific assessment below for further information, in addition to the impact and risk assessment in Sections 6.7 and 6.8 respectively. In the highly unlikely event of a marine diesel spill relevant cultural authorities will be engaged in the event of a spill that may affect them, as specified in Appendix D.

### Resource collection

A suite of marine species have been identified through consultation and literature as important resources, particularly as food sources. For example, Sea Country resources of noted relevance to Thalanyji people which may be present in the vicinity of the Montebello Islands include dugongs, majun (marine turtles), turtle eggs, fish and shellfish. Other resource species include marine mammals, fish, shellfish, crustaceans, seabirds, gastropods, sea urchins and mangrove seeds.

In addition to their immediate value as sustenance, the gathering and preparation of these resources are informed by cultural knowledge, and an inability to use these resources may result in a loss of ability to transfer that knowledge to future generations. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these communities may be impacted where there is an impact at the species/population level.

As assessed in Section 6.7, impacts from planned activities on the marine environment, including resources important to First Nations people, is expected to be limited to negligible or slight and therefore impacts that result in population effects (e.g., population decline, changes in migration routes, etc) are not expected. Impacts to potential resources within the EMBA, in the highly unlikely event of marine diesel spill, are described and risk assessed in Section 6.8.2 and are not expected to result in species / population level impacts. There may be potential impacts to resource collection along the coastlines where there is shoreline accumulation of marine diesel. Given hydrocarbon characteristics, rapid weathering, the low predicted volume ashore (3 m<sup>3</sup>), an unplanned release is not expected to have a substantial adverse impact resulting in population level changes. Therefore, impacts to resource collection would be limited to temporary exclusion in areas where there are hydrocarbons present, including shoreline accumulation. Further relevant cultural authorities will be engaged in the event of a spill that may affect them, as specified in Appendix D.

### **Marine Species**

#### Marine mammals (whale, dolphins, dugongs)

There are increase ceremonies / rituals for species of animals and plants important to First Nations, to enhance or maintain populations. Thalu are places where these increase ceremonies are performed. All mentions of active ceremonial sites in the reviewed literature were confined to onshore locations, though the values may extend offshore where, for example, the thalu relates to marine species populations. As thalu ceremonies are performed to maintain and increase populations of marine species, it is inferred that management applies at the species/population level and not to individuals—for example the thalu site on Murujuga which “brings in whales to beach” will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound. Reviewed literature (DBCA 2020) also includes information that is marked as information that cannot be copied, reproduced or

used without consent. The values described in the literature are environmental in nature, apply to marine mammal behaviours at a population level and are managed through existing environmental controls in Sections 6.7 and 6.8.

Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Whale symbology expressed through stories, music, and dance can reflect a group's connections with the sea, as well as marine fauna, which then comprise a group's cultural values (Ardler 2021; Bursill et al. 2007; Cressey 1998). Whales also speak to a broader connection that exists between First Nation people and their surrounding environment. Beyond mythology and symbolism, whales can be connected with various economic and social functions associated with everyday life. Cultural knowledge of whales, whale migration, behaviour and the related marine environment may all be important in ensuring the continuation of these socio-economic functions and other related activities that remain valuable to First Nations people (Fijn 2021). No impacts to communities' ability to perform or transmit stories, music or dance are anticipated from the Petroleum Activities Program. Where timing or performance is linked to sighting or engaging with these species, impacts may occur where numbers or migration behaviours are impacted at a population level.

First Nations groups have expressed interest about whale migratory routes and studies. Inter-generational transmission of cultural knowledge (including songlines) relating to marine mammals may be impacted where changes to population or behaviour at a population level results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

As described in the relevant environmental impact and risk assessments in Sections 6.7 and 6.8 respectively, potential impacts to cetaceans from planned activities are limited to behavioural impact, which may include temporary and localised deviations from migratory pathways for cetaceans. However, no permanent impacts preventing cetaceans from entering or occupying the areas have been identified. These impacts and risks are not considered to be ecologically significant at a population level, and hence are not expected to impact the value of marine mammals, including the transmission of cultural knowledge. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

#### Marine reptiles (turtles, sea snakes)

Turtles and their eggs have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) will be impacted where there is an impact at the species/population level.

Intangible cultural heritage may also include the transmission of cultural knowledge about marine reptiles, such as nesting areas, hunting areas and migratory patterns. Cultural knowledge may also be conveyed through stories, such as the turtle being trapped in the sea as a result of its greed for berries as recounted by Capewell (2020). Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). First Nations groups have expressed an interest regarding turtle monitoring programs and migration patterns. Activities that impact turtle populations and their marine environment may have an indirect impact on some Aboriginal communities as this can limit access to cultural sites or deplete hunting areas that would threaten local food security (Delisle et al. 2018:251). Inter-generational transmission of cultural knowledge (including songlines) relating to marine reptiles may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

As described in the relevant environmental impact and risk assessments in Sections 6.7 and 6.8 respectively, potential impacts to marine reptiles are likely to be restricted to temporary behavioural changes, which are not considered to be ecologically significant at a population level, and hence not expected to impact the value of marine reptiles, including the transmission of cultural knowledge or use as a resource. Further, impacts to turtle foraging habitat from dredging activities in Commonwealth waters will be limited to direct removal of sparse epifauna habitat, as modelling of the suspended sediment plumes from dredging is predicted to cause a detectable change to water quality with no impact to benthic communities and habitats. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

### Fish and Cephalopods

Fish and squid have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore these species (as resources) will be impacted where there is an impact at the species/population level.

Through consultation, fish were identified as important agents in the management of the broader ecosystem. It may be assumed that inter-generational transmission of cultural knowledge relating to fish may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003). Intangible cultural heritage associated with fish, including inter-generational knowledge regarding fishing techniques and migratory patterns, can be managed by reducing impacts to fish in nearshore marine environments to which this cultural knowledge is intrinsically connected.

The octopus is an important totem to Ngarla People and features in the creation story of Solitary Island. There are increase ceremonies / rituals for species of squid and octopus to enhance or maintain populations. Thalu are places where these increase ceremonies are performed. All mentions of active ceremonial sites in the reviewed literature were confined to onshore locations, though the values may extend offshore where, for example, the thalu relates to marine species populations. As thalu ceremonies are performed to maintain and increase populations of marine species, it is inferred that management applies at the species/population level and not to individuals.

As described in the relevant environmental impact and risk assessments in Sections 6.7 and 6.8 respectively, the potential impacts from the Petroleum Activities Program on fish<sup>42</sup> are considered to be localised and with slight, short-term (<1-year) impact potential on species (or lower), but not affecting ecosystem function, physical or biological attributes. Impact potential is not considered to be ecologically significant at a population level. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

### Seabirds

Seabirds, specifically shags, have been identified through literature as a culturally significant species (Malgana Land and Sea Management et al. 2021), as well as a resource (seabird eggs; Smyth 2007). Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) will be impacted where there is an impact at the species/population level. Intangible cultural heritage may also include the transmission of cultural knowledge about seabirds, such as nesting areas, hunting areas and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). Inter-generational transmission of cultural knowledge relating to seabirds may be impacted where changes to population or behaviour results in reduced sightings (e.g. through population decline, changes to migration routes or changes to migration seasonality). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003).

As described in the relevant environmental impact assessments in Sections 6.7, the potential impacts from the Petroleum Activities Program on seabirds is assessed to be no lasting effect. The potential for temporary behavioural disturbance localised around vessels from light is not expected to result in a substantial adverse effect on species' population, and light emissions will not seriously disrupt the lifecycle of an ecologically significant proportion any migratory bird species. In terms of risk, as described in Section 6.8.2, 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. Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the mobile transient nature of individuals, unplanned hydrocarbon releases are not expected to substantially modify, destroy or isolate an area of important habitat for migratory species. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

### Benthic habitats (coral, seagrass)

Through consultation, First Nations groups identified benthic habitats as valuable for their ecological values, including corals attracting fish and seagrass providing shelters for fauna, as well as an important habitat for dugongs. Additionally, coral is valued by MAC for its aesthetic values.

<sup>42</sup> Squid and octopus are considered to be impacted through similar impact pathways as fish, and hence the conclusion represented here are considered appropriate for cephalopods.

As described in the relevant environmental impact assessments in Sections 6.7, the potential impacts from the Petroleum Activities Program on benthic habitats is assessed to be no lasting effect. Specifically, elevated suspended sediment from dredging activities in Commonwealth waters are predicted to result in detectable change to water quality with no impact to benthic communities and habitats, with direct removal limited to the sparse epifauna habitat. Further, elevated suspended sediments from dredging activities in Commonwealth waters are not predicted (based on modelling) to interact with coral larvae (both pelagic and during settlement) at concentrations that may impact the various developmental stages. Potential environmental impacts to coral communities have been assessed in Section 6.7 and controls C2.2 and C2.10 have been adopted.

In terms of risk, as described in Section 6.8.2, a change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release. Given hydrocarbon characteristics, rapid weathering, short-term exposure, as well as the response strategies planned to be deployed, an unplanned release is not expected to result in a level of exposure to coral and seagrass that would cause an adverse impact on marine ecosystem functioning or integrity results. As such, cultural values and intangible cultural heritage associated with benthic habitats are expected to be maintained.

Shoreline Habitats (mangroves)

Through consultation, First Nations groups identified shoreline habitats as valuable for their ecological values, including mangroves for providing shelter to marine invertebrates, which are identified resources, and potential nursery for turtles. Literature also notes that mangroves are also valued for the flora and fauna they are associated with and support (Commonwealth of Australia 2002) and Smyth (2007) reports that mangrove seeds are used as a resource by Ngarda-Ngarli.

There is no overlap between the Operational Area and mangrove habitat, and no planned impacts to mangroves from the Petroleum Activities Program. In terms of risk, as described in Section 6.8.2, a change in habitat may occur due to a change in water or sediment quality following an unplanned hydrocarbon release. Given hydrocarbon characteristics, rapid weathering, the low predicted volume ashore (3 m<sup>3</sup>), as well as the response strategies planned to be deployed, an unplanned release is not expected to have a substantial adverse impact on marine ecosystem functioning or integrity. As such, cultural values and intangible cultural heritage associated with shoreline habitats are expected to be maintained.

**Conclusion**

The impact and risk assessment for cultural features and heritage values has determined that the planned activities are unlikely to result in an impact greater than negligible (F) and unplanned activities are assessed to have a residual risk rating of moderate (or lower). Woodside will continue to consider new heritage information as it becomes available (See C 16.2).

<b>ALARP Demonstration</b>	<i>As marine ecosystems may hold both cultural and environmental value (see Section 4.9.1), with cultural and environmental values intrinsically linked, in addition to the specific controls for cultural features and heritage values, the controls and performance standards in section 6.7 and 6.8 will reduce impacts to cultural features and heritage values, including marine species and habitats.</i>				
	<b>Control considered</b>	<b>Feasibility (F) &amp; Cost/ Sacrifice (Cs)</b>	<b>Benefit in Impact/Risk Reduction</b>	<b>Proportionality</b>	<b>Adopted</b>
	Apply a 'living heritage' <sup>43</sup> management approach. Woodside seeks advice and incorporates Traditional Custodian	F: Yes CS: Minimal	Implementation of the 'living heritage' approach pays acknowledgement and respect to Traditional Custodian communities. It supports the transfer	Benefits outweigh cost/ sacrifice.	Yes  <b>C 16.1</b>

<sup>43</sup> Living heritage supports community and individual identity. Intangible cultural heritage is 'living heritage' that is inherited from ancestors and passed on to their descendants. It is comprised of many influences, including oral traditions, art, social practices, rituals and ceremonies, cultural knowledge and practices. It is transmitted from generation to generation, and evolves in response to the environment. Woodside applies a 'living heritage' approach to its cultural heritage management. This includes ensuring that Traditional Custodians are given voice to identify interests, transmit information and express concerns. Woodside works with Traditional Custodians to support and follow appropriate cultural protocols, including calling to Country, conducting smoking ceremonies (in areas where this custom is appropriate) and undertaking cultural awareness. Woodside will collaborate and provide relevant information it holds to groups such as Heritage Management Committees where they are established.



<p>cultural knowledges across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.</p>	<p>of cultural knowledges and is an effective strategy to manage intangible cultural values.</p>	<p>F: Yes CS: Substantial costs</p>	<p>Implementation of this program is anticipated to allow Woodside to improve their understanding of potential cultural values and Heritage in the Operational Area and or EMBA and then develop avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified.</p>	<p>Benefits outweigh cost/sacrifice</p>	<p>Yes <b>C 16.2</b></p>
<p>Implement a program, which is compliant with Corporate Woodside Policies Strategies and procedures, to undertake ongoing consultation with Traditional Custodians whose functions, interests and activities may be affected by the Petroleum Activities Program.</p>	<p>F: Yes CS: Substantial costs</p>	<p>Implementation of activities and associated controls to ALARP and acceptable levels supports the maintenance of cultural features and heritage values</p>	<p>Benefits outweigh cost/sacrifice</p>	<p>Yes <b>C 16.3</b></p>	
<p>The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values.</p>	<p>F: No CS: Not feasible</p>	<p>Primary Installation Vessels are POB constrained with no ability to facilitate additional personnel</p>	<p>Not considered – control not feasible.</p>	<p>No</p>	
<p>Use of cultural heritage monitors on vessels to oversee implementation of controls protecting cultural values</p>	<p>F: Yes CS: Minimal</p>	<p>Ensures workforce is suitably aware of cultural features and heritage values in the area they are operating.</p>	<p>Benefits outweigh cost/sacrifice.</p>	<p>Yes <b>C 16.4</b></p>	
<p>Project inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.</p>	<p>F: Yes CS: Additional costs of engaging a maritime archaeologist</p>	<p>Provides further validation of assessments of outer shelf area conducted to date. Gives Traditional Custodians confidence that all reasonable</p>	<p>Benefits outweigh cost/sacrifice</p>	<p>Yes Complete and incorporated into Section 4.9.1</p>	

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assessments required for any new values identified		efforts have been made to identify and avoid impacts to heritage.		
Prior to the commencement of borrow ground dredging activities, undertake a MBES survey over specific areas of the Borrow Ground that may be disturbed by dredging.	F: Yes CS: Additional costs of undertaking MBES if the borrow Ground	MBES data of the borrow ground will allow the assessment of cultural features and prospective areas providing confidence that areas planned for disturbance do not contain any cultural features or sites.	Benefits outweigh cost/sacrifice.	Yes <b>16.5</b>
Borrow Ground MBES data collected to be: <ul style="list-style-type: none"> <li>Reviewed by a qualified maritime archaeologist to identify cultural features and prospective areas within the Borrow Ground prior to seabed disturbance.</li> <li>Any identified cultural features or prospective areas will be referred to the Heritage Management Committee <b>(C16.7)</b> prior to Borrow Ground seabed disturbance.</li> </ul> <p>During assessment by Heritage Management Committee, borrow ground dredging to avoid any identified cultural features or prospective areas.</p>	F: Yes CS: Additional costs of engaging a maritime archaeologist	In line with recommendation from Nutley (2023) data is to be assessed by qualified maritime archaeologist and where cultural features or prospective areas identified, further reviewed by Heritage Management Committee this will allow appropriate management and prioritising of Traditional Custodian input. The approach is aligned with the steps set out in DCCEEW draft guidelines on underwater cultural heritage.	Benefits outweigh cost/sacrifice.	Yes <b>16.6</b>
A Heritage Management Committee will be established with representatives from the MAC, Woodside and relevant experts	F: Yes CS: Additional costs of engaging relevant experts and sitting fees of Traditional Custodians.	Ensures appropriate management and prioritising Traditional Custodian input.	Benefits outweigh cost/sacrifice.	Yes <b>C 16.7</b>

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New information from further archaeological or ethnographic studies relevant to MAC will be considered by the Heritage Management Committee	F: Yes CS: Sitting fees of Traditional Custodians and additional costs of independent experts	Allows fast and effective response to new heritage information, ensuring appropriate management and prioritising Traditional Custodian input.	Benefits outweigh cost/sacrifice.	Yes <b>C 16.8</b>
Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act	F: Yes CS: Costs associated with the implementation	Implementation of the control ensures any impacts to significant Aboriginal areas and significant Aboriginal objects protected by Ministerial declaration, are acceptable under the standards of the ATSIHP Act.	Control based on legislative requirements – must be adopted.	Yes <b>C 2.9</b>
Unexpected finds of potential Underwater Cultural Heritage <sup>44</sup> sites / features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in Section 7.7	F: Yes CS: Costs of implementation	Allows management of new finds in accordance with legislative requirements, expert advice and community expectations.	Benefits outweigh cost/sacrifice.	Yes <b>C 2.10</b>
Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (C2.12)	F: Yes CS: Minimal	Ensures workforce as suitably aware of legal and process requirements for managing cultural features and heritage values.	Benefits outweigh cost/sacrifice.	Yes <b>C 2.11</b>
Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, Underwater Cultural Heritage Act 2018 and the ATSIHP Act	F: Yes CS: Minimal	Meets legislative requirements and community expectations.	Benefits outweigh cost/sacrifice.	Yes <b>C 2.12</b>

<sup>44</sup> Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act

<p>Implement management procedures to reduce noise impact potential to pygmy blue whales and humpback whales during contingent pipe unloading operations (while two B-types on DP alongside the PV)</p>	<p>F: Yes. CS: Potential for pipe delivery delays and inability to continue welding / laying pipeline, time and monetary costs in MFO training for vessel crew</p>	<p>A risk-based approach to management actions can be applied so greatest risk reduction is implemented during migration season/BIA and then controls cascade commensurate with the level of risk (i.e. peak north-bound migration, distribution area etc.).</p> <p>Restricting the time when two B-type pipe carriers are alongside the Pipelay Vessel on DP to times when it is less likely that pygmy blue whales and humpback whales will be present, can reduce vessel noise impact potential to these species.</p> <p>Where this control prevents impacts to whales at a population level, it maintains a culturally significant resource to a level that results in no observable change to coastal communities (migratory pathways maintained).</p> <p>The application of adaptive management for humpback whales is not considered necessary to reduce impacts and risks to ALARP and Acceptable levels.</p> <p>However, Woodside has adopted this control as a further precautionary measure.</p>	<p>Benefits outweigh cost / sacrifice</p>	<p>Yes <b>C 6.5</b></p>
<p>Manage vessel speed in the humpback and PBW whale BIAs in</p>	<p>F: Yes. It is possible to carry out for</p>	<p>There is mounting evidence that reduction of vessel</p>	<p>Benefits outweigh cost/sacrifice</p>	<p>Yes <b>C 6.7</b></p>

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<p>migration seasons within the Operational Area (excluding Pilbara Port)</p>	<p>vessels transiting within the Operational Area</p> <p><b>CS: will impact with longer transit times for vessels.</b></p>	<p>speeds can reduce vessel underwater noise emissions and increase the likelihood that fauna will be seen by vessels (and have more time to react) thereby reducing possibility of vessel strike.</p> <p>The Pilbara Port boundaries have been excluded As the Pilbara Port Authority sets speed limits for within the Port boundaries.</p> <p>Where this control prevents impacts to humpback and pygmy blue whales at a population level, it maintains a culturally significant resource to a level that results in no observable change to coastal communities (migratory pathways maintained).</p>
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<p>Should it be identified that relevant cultural authorities may be affected in the unlikely event of a spill, Woodside will engage with those parties as appropriate and in alignment with the FSP.</p>	<p>F: Yes CS: Minimal</p>	<p>Engaging with relevant cultural authorities that may be impacted by a spill will allow the Traditional Custodians to identify areas of concern.</p>	<p>Benefits outweigh cost/sacrifice</p>	<p>Yes Adopted, see Appendix D</p>
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**ALARP Statement** On the basis of the impact and risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, Section 2.3.3), Woodside considers the adopted controls appropriate to manage the potential impacts and risks to cultural features and heritage values. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.

**Acceptability Statement** The impact and risk assessment has determined that, given the adopted controls, planned activities are unlikely to result in an impact greater than negligible (F)<sup>45</sup> and unplanned activities are assessed to have a residual risk rating of moderate (or lower).

The Petroleum Activities Program and the EMBA are not expected to have a significant impact (e.g. changes in population levels) on MNES including marine fauna with a First Nations connection with, or

<sup>45</sup> Noting that as the receptor sensitivity is high the impact significance level is Slight (E).

traditional use in nearshore areas as defined in Section 4.9.1. While the activity will occur on the Ancient Landscape Woodside has:

- Consulted with MAC identified concerns associated with activities of this EP in Commonwealth waters. To address relevant concerns (see Appendix F, Table 1) additional controls (C 16.7 and C 16.8) have been included in the EP. In addition, recent engagement with MAC has confirmed they have no concerns at this time.
- Undertaken desktop assessments by qualified professionals, using remote sensing techniques, to identify known or potential underwater cultural heritage have been undertaken (refer to Section 4.9.1) and an unexpected finds procedure will be implemented (C 2.10). Therefore, the activity is not inconsistent with *Underwater Cultural Heritage Guidance for Offshore Developments* and the *DRAFT Guidelines to Protect Underwater Cultural Heritage* under the *UCH Act*.

In addition, Woodside has engaged with Traditional Custodians adjacent to the EMBA to understand the cultural features and heritage values that may occur and potential impacts from the activity. Additional controls considered and adopted, to minimise impacts to whales and associated songlines (C 6.5) have been discussed with the relevant persons who have raised the value.

The Program of Ongoing Engagement with Traditional Custodians (EPO 30 and C 16.2) and 'living heritage' management approach (C 16.1) have been developed to enable Woodside to manage cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians.

Further opportunities to reduce the impacts have been investigated above. The potential impacts and risks are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts and risks to cultural features and heritage values to a level that is acceptable, if ALARP.

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<b>Key Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values<sup>46</sup></b>			
<b>EPO</b>	<b>Adopted Control(s)</b>	<b>EPS</b>	<b>MC</b>
<p><b>EPO 23</b> 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.</p> <p><b>EPO 28</b> No impact to cultural features and heritage values, as stated in Table 4-27, greater than a consequence level of F<sup>47</sup> from the Petroleum Activities Program</p> <p><b>EPO 30</b> Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values.</p> <p><b>EPO 31</b> No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit<sup>48</sup>.</p> <p><b>EPO 32</b> New cultural values identified through the Program and supporting studies will be managed to ALARP and an</p>	<p><b>C 16.1</b> Apply a 'living heritage' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledge across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.</p> <p><b>C 16.2</b> Implement a program, which is compliant with Corporate Woodside Policies Strategies and procedures, to undertake ongoing consultation with Traditional Custodians whose functions, interests and activities may be affected by the Petroleum Activities Program.</p>	<p><b>PS 16.1.1</b> Woodside will continue to give voice to Traditional Custodians to identify interests, transmit information and express concern through Woodside's program as per PS 16.2</p>	<p><b>MC 16.1.1</b> Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified</p>
		<p><b>PS 16.1.2</b> Woodside will assess and where deemed practicable will implement appropriate cultural protocols where requested by Traditional Custodians</p>	<p><b>PS 16.1.2</b> Records demonstrate Woodside implemented cultural protocols as requested</p>
		<p><b>PS 16.2.1</b> Implement a program, which is compliant with Corporate Woodside Policies, Strategies and procedures, to undertake ongoing consultation with Traditional Custodians whose functions, interests and activities may be affected by the Petroleum Activities program. The Program may include, as agreed with relevant Traditional Custodians:</p> <ul style="list-style-type: none"> <li>• Social investment to support First Nations ranger programs</li> <li>• Support for First Nations oil spill response capabilities</li> <li>• Support for recording Sea Country values</li> <li>• Support to Traditional Custodian groups to build capabilities and capacity with respect to ability to engage with Woodside and the broader O&amp;G industry on activities</li> <li>• Development of ongoing relationships with Traditional Custodian groups</li> <li>• Any other initiatives proposed for the purpose of protecting Country including cultural values</li> </ul>	<p><b>MC 16.2.1</b> Records demonstrate discussions with relevant Traditional Custodian Groups on proposed partnerships and/ or initiatives initiated by Woodside, and responses to feedback provided by Woodside within 4 weeks.</p> <p><b>MC 16.2.2</b> Progress on the Program will be reported in line with annual sustainability reporting via the Woodside website.</p>

<sup>46</sup> As marine ecosystems may hold both cultural and environmental value (see Section 4.9.1), with cultural and environmental values intrinsically linked, in addition to the specific controls for cultural features and heritage values, the controls and performance standards in section 6.7 and 6.8 will reduce impacts to cultural features and heritage values including marine species and habitats.

<sup>47</sup> Defined as F – Negligible, no lasting effect (< 1 month) Localised impact not significant to areas /items of cultural significance

<sup>48</sup> Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.

<p>Acceptable level of impact</p> <p><b>EPO 15</b></p> <p>Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fish, marine mammals, marine reptiles, or the spatial distribution of a population</p> <p><b>EPO 11</b></p> <p>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.</p> <p><b>EPO 6</b></p> <p>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.</p> <p><b>EPO 12</b></p> <p>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.</p>		<p><b>PS 16.2.2</b></p> <p>Undertake an annual review of the program to determine its effectiveness and adapt the program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians</p>	<p><b>MC 16.2.3</b></p> <p>Records demonstrate an annual review of the program has been undertaken.</p>
	<p><b>C 16.3</b></p> <p>The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values.</p>	<p><b>PS 16.3.1</b></p> <p>Consideration of cultural values / new information, through the life of the EP, and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified. Where avoidance is not possible, impact minimisation will be prioritised and demonstrated through a written options analysis / ALARP to ensure an acceptable level of impact. This will be documented through Woodside's Management of Change and Management of Knowledge processes.</p>	<p><b>MC 16.3.1</b></p> <p>Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified</p>
	<p><b>C16.4</b></p> <p>Project inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.</p>	<p><b>PS 16.4.1</b></p> <p>All relevant marine crew have completed Project inductions that include information on cultural values, including tangible and intangible cultural heritage for awareness</p>	<p><b>MC 16.4.1</b></p> <p>Records demonstrate all relevant marine crew have completed inductions that include cultural material</p>
	<p><b>C 16.5</b></p> <p>Prior to the commencement of borrow ground dredging activities, undertake a MBES survey over specific areas of the Borrow Ground that may be disturbed by dredging.</p>	<p><b>PS 16.5.1</b></p> <p>MBES survey the Borrow Ground that may be disturbed by dredging completed prior to the commencement of borrow ground dredging.</p>	<p><b>MC 16.5.1</b></p> <p>Records of MBES survey the Borrow Ground</p>
	<p><b>C 16.6</b></p> <p>Borrow Ground MBES data collected to be:</p> <ul style="list-style-type: none"> <li>Reviewed by a qualified maritime archaeologist to</li> </ul>	<p><b>PS 16.6.1</b></p> <p>Cultural features or prospective areas as identified by a qualified maritime archaeologist have been referred to Heritage Management Committee (see C16.8) prior to Borrow Ground dredging.</p>	<p><b>MC 16.6.1</b></p> <p>Records demonstrate referral to the HMC where there are identified cultural features or prospective areas</p>



<p><b>EPO 19</b> No release of hydrocarbons to the marine environment due to a vessel collision associated with the Petroleum Activities Program.</p> <p><b>EPO 10</b> 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.</p>	<p>identify cultural features and prospective areas within the Borrow Ground prior to seabed disturbance.</p> <ul style="list-style-type: none"> <li>Any identified cultural features or prospective areas will be referred to the Heritage Management Committee (C16.8) prior to Borrow Ground seabed disturbance.</li> </ul> <p>During assessment by Heritage Management Committee, borrow ground dredging to avoid any identified cultural features or prospective areas.</p>	<p><b>PS 16.6.2</b> During assessment by Heritage Management Committee (refer to Section 7.5), identified cultural features or prospective areas avoided during borrow ground dredging.</p>	<p><b>MC 16.6.2</b> Demonstrate avoidance or implementation of outcomes as recommended by the Heritage Management Committee.</p>
	<p><b>C 16.7</b> A Heritage Management Committee is established with representatives from the MAC, Woodside and relevant experts.</p>	<p><b>PS 16.7.1</b> Establish a MAC Heritage Management Committee upon receipt of new heritage information as per Section 7.5</p>	<p><b>MC 16.7.1</b> Records show a Heritage Management Committee with MAC has been established and activities carried out</p>
	<p><b>C 16.8</b> New information from further archaeological or ethnographic studies relevant to MAC will be considered by the Heritage Management Committee</p>	<p><b>PS 16.8.1</b> Any new information from archaeological or ethnographic studies relevant to MAC considered by committee, as per Section 7.5</p>	<p><b>MC 16.8.1</b> Minutes of Heritage Management Committee meetings</p>
		<p><b>PS 16.8.2</b> Implement recommendations of the Heritage Management Committee where they lower the risk of impacts to heritage to ALARP.</p>	<p><b>MC 16.8.2</b> Records demonstrate recommendations that were ALARP were implemented</p>
	<p><b>C 2.9</b> Activities under the Petroleum Activities Program will be carried out in accordance with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act</p>	<p><b>PS 2.9</b> Where an object or Significant Aboriginal Area is protected by a declaration under Section 12 or Sections 9/10 respectively of the ATSIHP Act, no work inconsistent with that declaration will be conducted for the duration of that declaration.</p>	<p><b>MC 2.9.1</b> No non-compliances with any protection declarations relevant to the Operational Area, under Sections 9,10,12 of the ATSIHP Act</p>
	<p><b>C 2.10</b> Unexpected finds of potential Underwater Cultural Heritage<sup>49</sup> sites / features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in Section 7.7</p>	<p><b>PS 2.10</b> In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure set out in Section 7.7.</p>	<p><b>MC 2.10</b> No non-compliance with the Unexpected Finds Procedure.</p>

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	<p><b>C 2.11</b> Relevant vessel crew and ROV operators will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (C2.10)</p>	<p><b>PS 2.11</b> Relevant vessel crew (including ROV operators) are made aware of the requirements of the Unexpected Finds Procedure (C2.10) through an induction.</p>	<p><b>MC 2.11</b> Records demonstrate vessel crew are made aware of potential to encounter UCH.</p>
	<p><b>C 2.12</b> Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, Underwater Cultural Heritage Act 2018 and the ATSIHP Act</p>	<p><b>PS 2.12</b> Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (Section 7.7) including to:</p> <ul style="list-style-type: none"> <li>• WA Museum as requested during EP consultation</li> <li>• Australasian Underwater Cultural Heritage Database</li> </ul>	<p><b>MC 2.12</b> Records of potential UCH finds reported to relevant authorities and stakeholders.</p>
	<p><b>C 6.5</b> Implement management procedures to reduce noise impact potential to pygmy blue whales and humpback whales during contingent pipe unloading operations (while two B-types on DP alongside the PV)</p>	<p><b>PS 6.5.1</b> While operating in the PBW migration BIA during migration seasons (Apr-Jul &amp; Oct-Jan):</p> <ul style="list-style-type: none"> <li>• <u>or</u> in the distribution area (west of BIA and 20km east) during peak northbound migration (May, June):</li> <li>• <u>or</u> in the humpback whale migration BIA during peak migration periods (June, July &amp; Sept):</li> </ul> <p>Limit the number of B-type pipe transport vessels on DP within 25km of the PV (Control 6.5)</p>	<p><b>MC 6.5.1</b> Records show <b>C 6.5</b> implemented as required by temporal / spatial triggers</p>
	<p><b>C 6.7</b> Manage vessel speed in the humpback and PBW whale BIAs in migration seasons within the Operational Area (excluding Pilbara Port)</p>	<p><b>PS 6.7.1</b> Vessel speeds in the Operational Area (excluding Pilbara Port) are restricted ≤10kn:</p> <ul style="list-style-type: none"> <li>• When in the pygmy blue whale migration BIA during PBW migration periods (Apr-Jul &amp; Oct-Jan inclusive)</li> <li>• When in the humpback whale migration BIA during migration periods (May – Aug and Aug - Oct inclusive).</li> </ul>	<p><b>MC 6.7.1</b> Records demonstrate vessel speeds, in the Operational Area, transiting in whale BIAs in migratory seasons, were ≤ 10 knots.</p>

<sup>49</sup> Underwater Cultural Heritage is defined as any trace of human existence that has a cultural, historical or archaeological character and is located under water, in accordance with the UCH Act

## 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 1.8.4).

### 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.

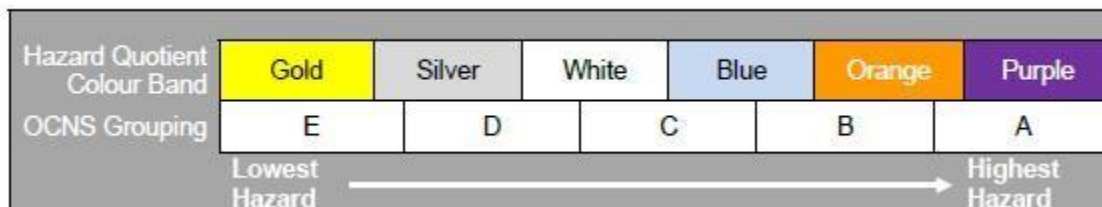


Figure 7-1: OCNS ranking scheme

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.

Chemicals with >60% biodegradation in 28 days to an OSPAR HOCNF accepted ready biodegradation protocol are considered acceptable in terms of biodegradation.

## Bioaccumulation

The bioaccumulation of chemicals is assessed using the CEFAS bioaccumulation criteria, which align with the categorisation outlined in the 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)<sup>50</sup> or operational areas defined in environmental approvals
- 'New build' vessels launched less than 14 days prior to mobilisation

<sup>50</sup> IMSMA is based on current legal framework and includes all nearshore waters around Australia, extending from the lowest astronomical tide mark to 12 nm from land (including Australian territorial islands). The IMSMA also includes all waters within 12 nm from the 50 metre depth contour outside of the 12 nm boundary (i.e. Submerged reefs and atolls).

- 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<sup>51</sup>. 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<sup>52</sup>).

### 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.
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.

<sup>51</sup> 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).

<sup>52</sup> 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
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

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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)<sup>53</sup>. 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.

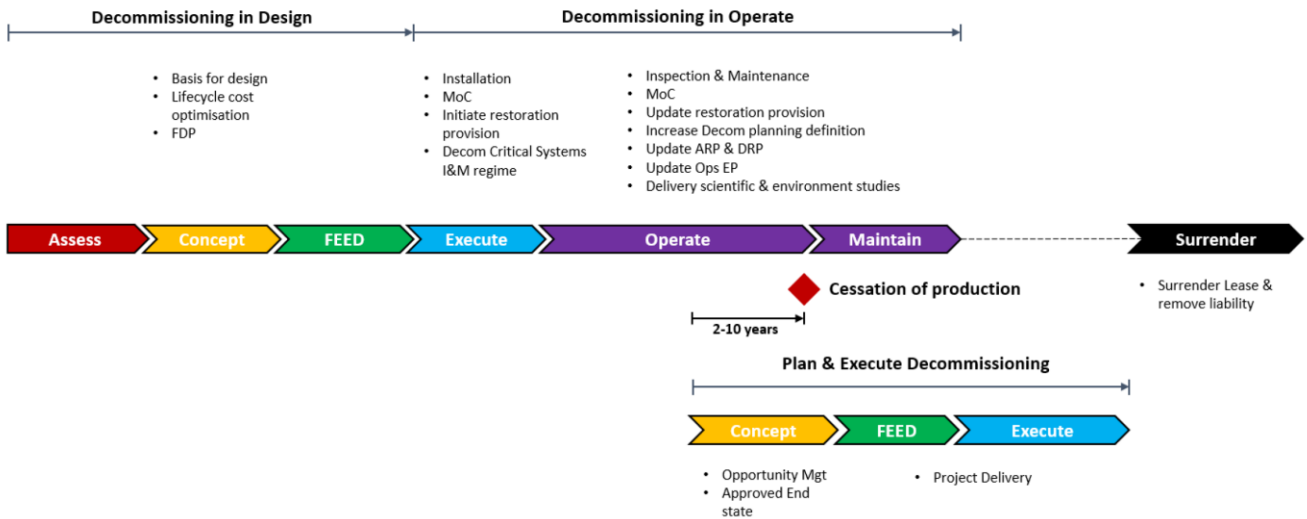
This assists with compliance with Section 572 (3) of the OPGGS Act, which requires titleholders to remove property when it is neither used, nor to be used, in connection with the operations.

#### 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.

<sup>53</sup>48 hours is considered an appropriate and ALARP management control, as it significantly reduces the potential for any IMS associated with a vessel to successfully establish suitable habitat within the IMSMA. This reduction of risk is primarily achieved via a direct reduction of the propagule pressure associated with a particular vessel movement.





**Figure 7-2: Woodside's process for decommissioning planning**

### 7.3.1.1 Scarborough Decommissioning Strategy

Section 3.11.1 describes the process by which the equipment will be tracked and added to the Inventory for the title. In proactively planning for decommissioning, the following information has been collated within a Scarborough Decommissioning Strategy for major infrastructure, including the Trunkline:

- Specifications
- Compositions
- Decommissioning critical systems
- IMR plans
- Feasibility of 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 Inspection, Maintenance, Monitoring and Repair requirements will ensure that the systems remain in functional condition, in connection with operations until EOFL.

### 7.3.1.2 Scarborough Trunkline Decommissioning

In order to satisfy future decommissioning obligations, including the requirements of the OPGGS Act, the following design and functional requirements of the export trunkline have been implemented:

- The export trunkline system design will allow for sweeping with sea water or other environmentally acceptable fluid, with capability to return to hydrocarbon separation facilities on the FPU or onshore for treatment.
- Adequate isolations will be provided so that subsea system hydrocarbon removal operations can be performed in accordance with relevant safety procedures and engineering standards.

- The trunkline will be able to be cleaned of hydrocarbons and contaminants, in situ, to a level based on an ALARP assessment.
- The export trunkline is designed to be feasible to remove from the seabed. A technical decommissioning assessment was undertaken and a Decommissioning Plan developed. The plan may be used at the time of decommissioning, with due consideration of best environmental outcome and technological advances available at the time, noting detailed plans and justification will be subject of a future EP. It considers various removal options:
  - Dredging/jetting and removal of rock cover to expose trunkline if sections are buried/embedded
  - Pigging and cleaning techniques
  - Removal by reverse S-lay and cutting into sections onboard a PLV
  - Removal by cutting subsea and retrieval by crane in some shallower water sections
  - Isolation and retrieval of structures by lifting

Although the trunkline contains no decommissioning critical systems, essential for the feasibility of decommissioning, there are several items that de-risk the decommissioning activity. The standard Inspection, Maintenance, Monitoring and Repair are designed to ensure that the following items remain in functional condition for use in connection with the operations until EOFL. Although functionality of these items does not impact overall decommissioning feasibility it is intended to minimise the complexity of future decommissioning activities:

- PLET 32" connection system
- PLET 32" valve
- ILTA 16" connection system
- ILTA 16" valves (2-off)

The Trunkline Decommissioning Plan will be integrated within suitable operational documents, ensuring the system, used in connection with operations, is appropriately maintained throughout field life. More detailed preparation for decommissioning execution, including relevant plans and procedures, will be developed as per the timeline in Figure 7-2.

#### 7.4 Roles and Responsibilities

Key roles and responsibilities for Woodside and contractor personnel relating to implementing, managing and reviewing this EP are described in Table 7-4. Roles and responsibilities for oil spill preparation and response are outlined in Appendix 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
<b>Office-based Personnel</b>	
Woodside Project Manager (or delegate/s)	<ul style="list-style-type: none"> <li>• Monitor and manage the activity so it is undertaken as per the relevant standards and commitments in this EP.</li> <li>• Notify the Woodside Environment Adviser of any scope changes in a timely manner.</li> <li>• Liaise with regulatory authorities as required.</li> <li>• Review this EP as necessary and manage change requests.</li> <li>• Ensure all project and support vessel crew members complete an HSE induction.</li> <li>• Verify that contractors meet environmental related contractual obligations.</li> <li>• Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside’s Health, Safety and Environment Reporting and Investigation Procedure.</li> <li>• Monitor and close out corrective actions identified during environmental monitoring or audits.</li> </ul>
Woodside Environmental Adviser	<ul style="list-style-type: none"> <li>• Verify relevant Environmental Approvals for the activities exist prior to commencing activity.</li> <li>• Track compliance with performance outcomes and performance standards as per the requirements of this EP.</li> <li>• Prepare environmental component of relevant Induction Package.</li> <li>• Assist with the review, investigation and reporting of environmental incidents.</li> <li>• Ensure environmental monitoring and inspections/audits are undertaken as per the requirements of this EP.</li> <li>• Liaise with relevant regulatory authorities as required.</li> <li>• Assist in preparation of external regulatory reports required, in line with environmental approval requirements and Woodside incident reporting procedures.</li> <li>• Monitor and close out corrective actions (Campaign Action Register (CAR)) identified during environmental monitoring or audits.</li> <li>• Provide advice to relevant Woodside personnel and contractors to assist them to understand their environment responsibilities.</li> <li>• Liaise with primary installation vessel 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.</li> </ul>
Woodside Corporate Affairs Adviser	<ul style="list-style-type: none"> <li>• Prepare and implement the Stakeholder Consultation Plan for the Petroleum Activities Program.</li> <li>• Report on stakeholder consultation.</li> <li>• Ongoing liaison and notification as required as per Section 7.17.</li> </ul>
Woodside Marine Assurance Superintendent	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Woodside CICC Duty Manager	On receiving notification of an incident, the Woodside CICC Duty Manager shall:

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Title (role)	Environmental Responsibilities
	<ul style="list-style-type: none"> <li>• establish and take control of the IMT and establish an appropriate command structure for the incident</li> <li>• assess situation, identify risks and actions to minimise the risk</li> <li>• communicate impact, risk and progress to the Crisis Management Team and stakeholders</li> <li>• develop the incident action plan (IAP) including setting objectives for action</li> <li>• approve, implement and Manage the IAP</li> <li>• communicate within and beyond the incident management structure</li> <li>• manage and review safety of responders</li> <li>• address the broader public safety considerations</li> <li>• conclude and review activities.</li> </ul>
<b>Vessel-based Personnel</b>	
Vessel Master (all vessel types)	<ul style="list-style-type: none"> <li>• Ensure the vessel management system and procedures are implemented.</li> <li>• Ensure personnel commencing work on the vessel receive an environmental induction that meets the relevant requirements specified in this EP.</li> <li>• Ensure personnel are competent to undertake the work they have been assigned.</li> <li>• Verify SOPEP drills are conducted as per the vessel's schedule.</li> <li>• Ensure the vessel Emergency Response Team (ERT) has been given sufficient training to implement the SOPEP.</li> <li>• Ensure any environmental incidents or breaches of relevant Environmental Performance Outcomes or performance standards detailed in this EP, are reported immediately to the Woodside Site Representative.</li> <li>• Ensure corrective actions for incidents or breaches are developed, communicated to the Woodside Site Representative, and tracked to close out in a timely manner. Close out of actions is communicated to the Woodside Site Representative.</li> </ul>
Vessel Logistics Coordinators	<ul style="list-style-type: none"> <li>• Ensure waste is managed on the relevant vessels and sent to shore as per the relevant Waste Management Plan.</li> </ul>

Title (role)	Environmental Responsibilities
Vessel HSE Advisers*	<ul style="list-style-type: none"> <li>• 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).</li> <li>• Support the Woodside Site Representative to ensure the EPOs are met and the PSs detailed in this EP are implemented on the vessels</li> <li>• 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.</li> <li>• Ensure periodic environmental inspections/reviews are completed and corrective actions from inspections are developed, tracked and closed out in a timely manner.</li> <li>• Review contractors' procedures, input into Toolbox talks and JSAs.</li> <li>• Provide day-to-day environmental support for activities in consultation with the Woodside Environment Adviser.</li> </ul>
Offshore Construction Manager*	<ul style="list-style-type: none"> <li>• Confirm that activities are undertaken in accordance with this EP, as detailed in the Woodside approved Contactor Environmental Management Plan</li> <li>• Ensure personnel commencing work on the project receive a relevant environmental induction that meets the requirements specified in this EP</li> <li>• Ensure personnel are competent to undertake the work they have been assigned</li> <li>• 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.</li> </ul>
Woodside Site Representative (WSR) / Resident Engineer*	<ul style="list-style-type: none"> <li>• Ensure activities are undertaken as detailed in this EP.</li> <li>• Ensure the management measures made in this EP are implemented on the vessel</li> <li>• Ensure environmental incidents or breaches of objectives, standards or criteria outlined in this EP, are reported as per the Woodside Corporate Event Notification Matrix</li> <li>• Verify HSE improvement actions identified during the project are implemented where practicable</li> <li>• Ensure periodic environmental inspections are completed.</li> </ul>

*\*Apply to PV and construction vessel(s) – 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 PV or construction vessel personnel who will manage the other vessels accordingly.*

## 7.5 Heritage Management Committee Implementation

Following consultations with MAC it was requested that Woodside develop a mechanism to address the management of new heritage information. In particular it was requested that a formal mechanism be established to address any new ethnographic values identified through an additional ethnographic survey.

On 1 February 2022, Woodside proposed 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”. This proposal required recommendations of the HMC to be unanimous, without limiting MAC’s right to provide additional advice to Woodside.

In a letter signed 7 October 2022, MAC responded to Woodside’s proposal, specifying that membership of the HMC should include:

- MAC’s Circle of Elders;
- MAC’s Board and/or executive;
- MAC staff;
- Representatives from Woodside; and
- Appropriately qualified heritage experts agreed between MAC and Woodside.

MAC’s letter also clarified the milestones which may trigger a meeting of the HMC:

- Finalisation of a report from a future ethnographic survey;
- Conclusion of any future heritage assessment activities agreed by Woodside and MAC to inform the management of heritage for the Scarborough Project;
- Any proposed changes to the methodology for construction of the Scarborough Project requiring an update to the Scarborough CHMP or the management of Cultural and Spiritual Values;
- Following the discovery or identification of new heritage values relevant to the construction or operation of the Scarborough Project; and
- Following the discovery or identification that heritage values previously identified beyond the Scarborough Project are also relevant to the construction or operation of the Scarborough Project.

It is intended that recommendations of the HMC will be implemented where they (independently or in conjunction with other actions) lower the risk of impacts to heritage to a level that is as low as reasonably practicable (ALARP). Woodside will also comply with relevant regulations, legislation and principles and requirements of this EP.

The process for addressing new information, therefore, is as follows:

- Upon becoming aware of any matter that would trigger a meeting of the HMC, Woodside is to notify MAC and request a meeting of the HMC.
- Woodside and MAC are to agree on the appropriate heritage experts to be engaged. Timing of the meeting should be as soon as practicable, but it is acknowledged that flexibility will be required particularly during law time to account for the cultural obligations of elders.
- Relevant information must be made available to attendees prior to the meeting.
- The HMC is to meet to discuss the relevant information provided and develop recommendations to Woodside.

- Woodside must implement all ALARP recommendations of the HMC.
- Where the recommendations are not considered ALARP—for example due to implementation of the recommendation resulting in a risk to safety or violation of a regulation or legislation—Woodside must:
  - Notify the members of the HMC that it will not implement the recommendation, the reason for not implementing the recommendation, and any alternative actions being undertaken to align with ALARP,
  - Take reasonable steps to receive timely responses from the HMC to the notifications in a, proportionate to the urgency of action to be undertaken
  - Implement any alternative actions committed to in a with necessary modifications after consideration of the responses in b, and
- Respond to any subsequent correspondence from HMC members

## 7.6 Thalanyji Sea Country Management Process

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

In correspondence from 20 February 2023 (refer to Appendix F, Table 1) BTAC advised that:

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

Woodside's offer of technical support is detailed in Appendix F, Table 1, but this has not yet been accepted.

A review of publicly available literature has been undertaken to seek clarity on the extent of Sea Country for Thalanyji people. (Section 4.9.1.5.3) The publicly available information considered does not record any instances of Thalanyji sea country extending beyond the Montebello Multiple Use Zone within the vicinity of the islands.

There are no credible planned impacts to the Montebello Islands, Barrow Island or the Mackerel Islands or the islands indicated in WC1999/045.

Woodside has developed a robust understanding of Thalanyji Sea Country cultural values and heritage features through publicly available information (Section 4.9.1.5.1) and consultation with BTAC under regulation 11A. Woodside considers that it has taken all reasonable and practicable steps to identify cultural features and heritage values of Thalanyji people in the EMBA that may be affected by the activity.

If further guidance from BTAC is received as part of ongoing consultation which changes Woodside's understanding of the extent of Thalanyji Sea Country, Woodside's Management of Change and Management of Knowledge process with EPO 28 will be applied to manage potential impact to newly identified cultural values or features to ALARP and Acceptable levels. This estimation does not limit the extent of consultation with BTAC or the features and values they are encouraged to identify and communicate.

Woodside will implement the process in Table 7-5 to ensure all reasonable steps have been taken to identify sea country values relative to BTAC through ongoing consultation.

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**Table 7-5: BTAC Ongoing Consultation**

Activity	Timing
Woodside contacted BTAC to discuss the best way forward to consult with BTAC	Completed January 2023
Woodside and BTAC commenced correspondence regarding a consultation or engagement framework, including financial resourcing for BTAC	Ongoing since February 2023
BTAC confirmed that subject to formalising arrangements – for example under a collaboration agreement - BTAC agrees in principle for Woodside to include the statements described in the letter from Woodside dated 17 March.	Completed 18 April 2023
BTAC requested Woodside provide a draft presentation for BTAC’s board regarding Woodside’s activities on Thalanyji country, and draft key terms / key principles regarding a Collaboration Agreement	Completed 4 May 2023
Woodside provided to BTAC a draft of principles for a consultation framework, targeting having the framework agreed and in place by 31 July 2023	Completed 14 June 2023
Woodside wrote to BTAC inviting BTAC to submit a cost estimate to continue consultations and address items in the draft framework principles, in the interim whilst the framework is being agreed	Completed 14 July 2023
BTAC wrote to Woodside regarding the draft framework principles and proposed to forward Woodside a Costs Acceptance Letter to address resourcing for ongoing consultation	Completed 19 July 2023
Woodside provided BTAC with a draft presentation for BTAC’s board, including a map showing a consolidated EMBA - a consolidation of all single activity EMBA’s that have been notified to BTAC to date	Completed 20 July 2023
<p>1 Woodside requested an ethnographic assessment to be undertaken by BTAC, including:</p> <ul style="list-style-type: none"> <li>• That the scope of works identifies the values of sea-country generally sufficient to inform all Woodside EPs;</li> <li>• That Woodside will cover all reasonable costs of this assessment, to be agreed upon receipt of a cost estimate from BTAC;</li> <li>• That, in order to ensure the independence of any assessment and confidence in the process and consultants, Woodside’s preference is for BTAC to manage the assessment, including selection of any consultant, but acknowledging the constraints on BTAC’s time and resources that where directed Woodside (or a consultant) is willing to provide in-kind support for the assessment, including some or all tasks required to coordinate the assessment;</li> <li>• That any resulting report or other materials will remain the intellectual property of BTAC, but that Woodside will retain a perpetual right to use the content of any non-culturally sensitive report or other materials produced for the purposes of project approvals and planning, including providing these in full to regulators and government authorities as needed, and that where culturally sensitive reports or other materials are produced a non-culturally sensitive (redacted or edited) version will be provided subject to the same perpetual right above; and</li> <li>• To minimise the burden of duplication on BTAC and allow prioritisation of this assessment any results of this assessment may be shared by BTAC with other proponents, and where other proponents require ethnographic assessment outside of the proposed scope but aligned with the assessment timeframes, the engaged consultants may perform the required additional work (including additional days of research, fieldwork etc.) as an extension of this assessment at the cost of those proponents (thus avoiding duplication of time and costs relating to logistics, administration etc.)</li> <li>• Reiterate commitment to undertaking ethnographic assessments with BTAC, Woodside will use all reasonable efforts so that the work is completed prior to Trunkline installation in the area estimated as relevant to BTAC, but subject to BTAC’s availability and priorities.</li> </ul>	<p>Completed 31 July 2023</p> <p>Follow up after 2 weeks and once monthly in September and October.</p> <ul style="list-style-type: none"> <li>• Completed follow up 2 weeks on 15 August</li> <li>• Completed further follow up on 23 August</li> </ul>

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Activity		Timing
2	<p>Woodside will continue to implement its Management of Change and Management of Knowledge processes where new information is communicated from BTAC (including as a result of the ethnographic survey proposed in item 1) at any time.</p> <ul style="list-style-type: none"> <li>Seek to consult with BTAC on any identified cultural values and relevant management and mitigation measures</li> <li>Implement PS 16.3.1 which manages potential impact to newly identified cultural values or features to ALARP and Acceptable Levels</li> </ul>	Within 14 days of new cultural values being communicated from BTAC
3	Ongoing consultation as per Ongoing Program of Traditional Owner Consultation	Per Ongoing Program
4	Building capacity for the ongoing protection of country, including initiatives agreed with BTAC for the articulation of values on Sea Country in a manner that could be more clearly understood by the offshore sector, government, and the community.	Per Ongoing Program
Woodside notified BTAC of the planned start date of the activity, again providing information about the activity and requesting any further information on cultural features and/or heritage values prior to a date specified, to be considered in ongoing consultation. PS16.3.1 will be implemented to manage potential impact to newly identified cultural values or features to ALARP and Acceptable Levels.		14 September
<p>In absence of further response from BTAC, Woodside has undertaken desktop research to:</p> <ul style="list-style-type: none"> <li>Identify Indigenous cultural features and heritage values off the WA coastline (<b>Section 4.9.1.5.1</b>)</li> <li>Clarify the extent of Thalanyji sea country (<b>Section 4.9.1.5.3</b>)</li> </ul> <p>PS16.3.1 will be implemented to manage potential impact to newly identified cultural values or features to ALARP and Acceptable Levels</p>		-

## 7.7 Unexpected Finds Procedure

In the event of the discovery of what appears to be Underwater Cultural Heritage (defined as ‘any trace of human existence that has a cultural, historical or archaeological character and is located under water’); the following Unexpected Finds Procedure will apply:

- All activities with the potential to impact the suspected Underwater Cultural Heritage must cease immediately. Retain all records of the potential Underwater Cultural Heritage including any imagery, description and location.
- Person who discovers the heritage object must inform the Activity Supervisor.
- Activity Supervisor must notify Woodside’s Principal Heritage Adviser.
- Woodside will specify an appropriate buffer around the potential Underwater Cultural Heritage, taking into consideration the nature and scale of the potential Underwater Cultural Heritage and the activities to be managed.
- No seabed disturbance may occur within the buffer area around the potential Underwater Cultural Heritage until approved by Woodside’s Principal Heritage Adviser.
- Woodside’s Principal Heritage Adviser must notify a qualified maritime archaeologist and provide all available documentation of the potential Underwater Cultural Heritage.
- If the potential Underwater Cultural Heritage appears to be Aboriginal Underwater Cultural Heritage, Woodside’s Principal Heritage Adviser must notify the appropriate Traditional Custodians to determine whether it is a heritage site and if so, how the site should be managed.
- If the potential Underwater Cultural Heritage appears to be a shipwreck or aircraft that has been wrecked for more than 75 years, or is otherwise reportable under Section 40 of the UCH Act, Woodside’s Principal Heritage Adviser must notify the Minister responsible for the UCH Act, the

DCCEEW underwater archaeological section through the Australasian Underwater Cultural Heritage Database, and the Western Australian Museum.

- If the suspected heritage object includes human remains, Woodside's Principal Heritage Adviser must also notify:
  - the Australian Federal Police (phone: 131 444) of the location of the remains, that the remains are likely to be historic or Aboriginal in origin, and that it may be appropriate that Traditional Custodians and a maritime archaeologist are present during any handling of the remains; and
  - the Office of the Federal Environment Minister in accordance with Section 20 of the ATSIHP Act
- Work must not recommence in the vicinity of the heritage object until Woodside's Principal Heritage Adviser provides written approval. Woodside's Principal Heritage Adviser must only provide written approval once agreed management measures are implemented consistent with approvals and legislation or where the potential Underwater Cultural Heritage is confirmed to not be Underwater Cultural Heritage.

## 7.8 Training and Competency

### 7.8.1 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.

### 7.8.2 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 (including cultural values and heritage) of the activity location.
- Regulations relevant to the activity.
- Woodside's Environmental Management System – Environment and Biodiversity Health, Safety and Environment Policy.
- EP importance/structure/implementation/roles and responsibilities.
- Main environmental aspects/hazards and potential environmental impacts and related performance outcomes.
- Oil spill preparedness and response.

- Monitoring and reporting on performance outcomes and standards using MC.
- Incident reporting.

In addition, the inductions will cover the requirement that there will be no recreational fishing from vessels.

### 7.8.3 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. Attendance lists are recorded and retained. 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.

### 7.8.4 Marine Fauna Observation Training

The Marine Fauna Observer (MFO) role may be completed by vessel crew who are appropriately trained prior to the activity commencing. For those performing the MFO role in the Pygmy Blue Whale migratory BIA and Distribution Range in particular, training will include information specific to PBW identification. Requirements for an MFO / triggers are outlined in Section 6.7.6 and summarised in Table 7-6.

Woodside and Contractor personnel will be trained to deliver the MFO 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 Woodside, to ensure Project specific information is incorporated. The bespoke training package will cover:

- An overview of Scarborough Project activities and the marine megafauna that may be present during these activities
- An overview of the potential impacts and risks to marine megafauna, including pygmy blue whales
- 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
- Precautionary approach to identification i.e. assume pygmy blue whale if positive ID of different species type not possible;
- The role and responsibilities of MFOs
- The observation and reporting requirements (Section 7.17).
- 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 / pygmy blue whales 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

- An overview of the potential impacts to protected marine fauna.

Records will be maintained as evidence of the vessel crew who have completed the MFO training. Completion of MFO Training (focusing on pygmy blue whales (PBWs)) is a minimum requirement for those performing observations relevant to PBW mitigation/adaptive management measures in this EP. For any trained crew who have not conducted MFO training 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.

**Table 7-6: Vessel noise management controls and MFO requirements summary – risk-based hierarchy**

PBW spatial management areas	PBW temporal management periods		
	Peak Northbound Migration (May/June)	Migration Season (April – Jul & Oct – Jan)	Outside PBW Migration Season (Feb/Mar & Aug/Sept)
<b>KP 200-374</b> (Migration BIA)	Trained vessel crew making observations if they see something as part of usual duties (C6.2) <b>Second B-type on DP within 25km of C1 – Not allowed (PS 6.5.1)</b>		Trained vessel crew making observations if they see something as part of usual duties (C6.2) MFO to make dedicated continuous observations 60 mins prior to second B-type arrival (PS 6.5.2)
<b>KP 180-200 + KP 374-430</b> (Distribution Area)	Trained vessel crew making observations if they see something as part of usual duties (C6.2)  <b>Second B-type on DP within 25km of C1 – Not allowed (PS 6.5.1)</b>	Trained vessel crew making observations if they see something as part of usual duties (C6.2) MFO to make dedicated continuous observations 60 mins prior to second B-type arrival (PS 6.5.2)  <b>Second B-type on DP within 25km of C1 –</b> <b>Day</b> - only allowed if no PBW (certain or possible) sighted by MFO during 60 mins preceding arrival <b>Night</b> – only allowed if no PBW sighted by Trained Vessel Crew in preceding day-light period	<b>Second B-type on DP within 25km of C1 –</b> <b>Day</b> - only allowed if no PBW (certain or possible) sighted by MFO during 60 mins preceding arrival <b>Night</b> – only allowed if no PBW sighted by Trained Vessel Crew in preceding day-light period
<b>KP 30-180</b> (NWS and inshore Distribution Range)	Trained vessel crew making observations if they see something as part of usual duties (C6.2) No additional controls		

**Definitions:**

**Migration BIA** – ~KP 200 – KP 374

**Distribution Area** – West of the Migration BIA & 20 km east of the BIA (i.e., from KP 180 - KP 200 and KP 374 – PLET at KP 430).

*Note – this area (defined for the Scarborough SITI activities) is a subset of the broader PBW Distribution Range which extends to mainland Australia (refer to the Blue Whale Conservation Management Plan (Commonwealth of Australia, 2015)*

**Migration Seasons** – April to July (Northbound) & Oct to Jan (Southbound)

**Peak Migration Seasons** – May/June (Northbound) & Nov (Southbound)

**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)

**Marine Fauna Observer (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.

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## 7.8.5 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.

## 7.9 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.

### 7.9.1 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
- Environmental discharge reports that record volumes of planned and unplanned discharges, to ocean and atmosphere.
- Internal auditing and assurance program as described in Section 7.10.

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 7.10.

### 7.9.2 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.

In addition, Section 7.5 detail the process for the Heritage Management Committee to assess new information. Any relevant new information on cultural values and heritage will be assessed using the EP Management of Change Process (refer to Section 7.15).

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.

## 7.10 Tiered Monitoring and Management Framework

The tiered monitoring and management framework (TMMF) is a proactive and adaptive framework informed by water quality to manage the dredging activities such that impacts to benthic communities and habitats (BCH) are not realised through its implementation. The TMMF aims to manage TSHD trenching and spoil disposal, and borrow ground dredging and backfill activities within acceptable water quality boundaries, to avoid reversible impacts to coral communities as the most sensitive receptor in Ecological Zone A and B and sponges in the Offshore Zone (see description in Section 6.7.2). An overview of the TMMF is provided below with the details set out in the Scarborough Project Dredging and Spoil Disposal Management Plan<sup>54</sup>, which has been approved by the CEO of DWER under Condition 6 of Ministerial Statement No.1172 approved under the Environmental Protection Act 1986 (WA). Details pertinent to State waters scope are subject to change with any changes to be approved by the CEO, and implemented.

### 7.10.1 Tiered trigger levels and process

An overview of the management triggers are provided in Table 7-7.

The management triggers have been derived from the same dataset and literature as the modelling thresholds (see Appendix I), however have been applied conservatively, with the Tier 3 management trigger aligned with the ZoMI threshold (i.e. reversible impacts).

In Commonwealth waters, the triggers are for sponges and filter feeders, as corals, seagrasses and macroalgae are not known to form significant communities in the zone. Filter feeder-sponge thresholds and associated management triggers have been adapted from Pineda et al. (2017). Zone B management triggers have also been included acknowledging there is a potential impact pathway from Commonwealth activities to influence benthic communities in State waters. These triggers were derived for corals as the most sensitive receptor from Jones et al (2019).

**Table 7-7: Tiered management trigger levels (as relevant to Commonwealth activities)**

Trigger	Averaging Period	Trigger (NTU)	DLI (mol/d)
<b>Offshore Zone</b>			
Tier 1	22 days	>11.25	<0.9
Tier 2	26 days	>11.25	<0.9
Tier 3	28 days	>11.25	<0.9
<b>Zone B</b>			
Tier 1	1 days	>10.5	<1.8
	4 days	>9.36	<2.2
	8 days	>8.36	<2.5
Tier 2	1 days	>13.86	<1.1
	5 days	>10.5	<1.8
	8 days	>9.36	<2.2
	12 days	>8.36	<2.5

<sup>54</sup> available online [Scarborough Project \(Nearshore Component\) Dredging and Spoil Disposal Management Plan](#)

Trigger	Averaging Period	Trigger (NTU)	DLI (mol/d)
Tier 3	3 days	>13.86	<1.1
	7 days	>10.5	<1.8
	10 days	>9.36	<2.2
	14 days	>8.36	<2.5

The assessment of monitoring data against the tiered management triggers comprises two key aspects:

- The comparison of measured data against the turbidity and DLI numeric values over a defined time period. Note it is the combined effects (EPA 2021b) so both NTU and DLI values are required to be exceeded to move onto Step 2.
- The exceedance of a numeric value for turbidity and daily light integral (DLI) over a defined averaging time period
- A Project attributability assessment to determine if trenching and spoil disposal or borrow ground dredging and backfill activities can reasonably be expected to have contributed to or caused the exceedance.

Both parts of the assessment are required before it can be determined that an exceedance of a management trigger has occurred. For example, if the both the NTU and DLI values are exceeded over the defined time period but the attributability assessment indicates that the breach is not attributable to Project activities, then the determination is the trigger level has not been exceeded.

#### 7.10.1.1 Project attributability assessment

When a tiered management trigger is exceeded, the initial response is to investigate the cause of the exceedance and whether or not the detected change can be reasonably attributed to dredging (trenching or borrow ground), spoil disposal or backfill activities, rather than a result of an anomalous reading or a natural event or an external anthropogenic event. This approach ensures that adaptive management actions are targeted to improving water quality and that the program can be completed effectively within the proposed timeframes.

There are two key steps for assessing project attributability; assessment of data reliability and evaluation of multiple lines of evidence, including but not limited to weather and oceanographic conditions, site specific and regional water quality data, nature of recent dredging activities and experimental evidence. The attributability assessment will be documented and appropriately conservative based on the evidence available.

#### 7.10.1.2 Adaptive management actions

In the event that an exceedance is found to be attributable to trenching and spoil disposal or borrow ground dredging and backfill activities, the appropriate actions will be identified and initiated as per the TMMF illustrated in Figure 7-3. For a Tier 2 and Tier 3 management trigger exceedances, this includes the identification and execution of appropriate responsive or contingency management actions respectively.

##### 7.10.1.2.1 Responsive management actions

Responsive management actions will be implemented when a Project-attributable Tier 2 exceedance has occurred. There are a range of options that are considered practical to reduce the mass of sediment released during trenching and spoil disposal or borrow ground dredging and backfill activities. These may include (Netzband et al., 2009):

- Adjust the suction flow velocity.
- Adjust the jet water flow velocity.



- Alter the overflow time of the TSHD.
- Adjust the overflow height.
- Adjust the TSHD trailing speed.
- Modify the rate of operations.
- Adjust sailing speed of barges (propeller wash).
- Optimise the timing and spacing of dredge activities.
- Optimise disposal location within spoil disposal ground.
- Relocate TSHD.

The selection of management action/s will consider the context of the dredging operation at the time (such as location, tides, water depth). Not all options will have similar effect in all circumstances and locations; therefore, any option implemented will require evaluation and subsequent modification where appropriate. The applicability and effectiveness of management actions will be assessed and rationalised by the Dredging Contractor in consultation with, and approved by Woodside, before implementation.

Water quality will continue to be monitored after Tier 2 trigger exceedance to assess whether the adopted management actions have been effective in improving water quality. Responsive management action/s can only cease (return to normal operations) once turbidity returns below the Tier 2 trigger or once superseded by implementing more effective management action/s.

#### **7.10.1.2.2 Contingency management actions**

Contingency management actions will be applied when a Project-attributable Tier 3 exceedance has occurred. Contingency management actions are those known to markedly reduce the loss of fines sediment released during dredging activities. These may include (Netzband et al., 2009):

- Relocate TSHD.
- Optimise the spacing and timing of dredge activities.
- Temporarily cease overflow on the TSHD.
- Tidal operations for BHD and/or TSHD and/or all equipment.
- Production limit for BHD and/or TSHD and/or all equipment
- Temporarily suspend operations of BHD and/or TSHD.
- Temporarily suspend all dredging operations.

The applicability and effectiveness of management actions will be assessed and rationalised by the Dredging Contractor in consultation with, and approved by Woodside, before implementation. Water quality will continue to be monitored after Tier 3 trigger exceedance to assess whether the adopted management actions have been effective in improving water quality. Contingency management action/s can only cease (return to normal operations) once water quality returns to below the Tier 2 turbidity trigger.

An overview of the management framework is presented in Figure 7-3.

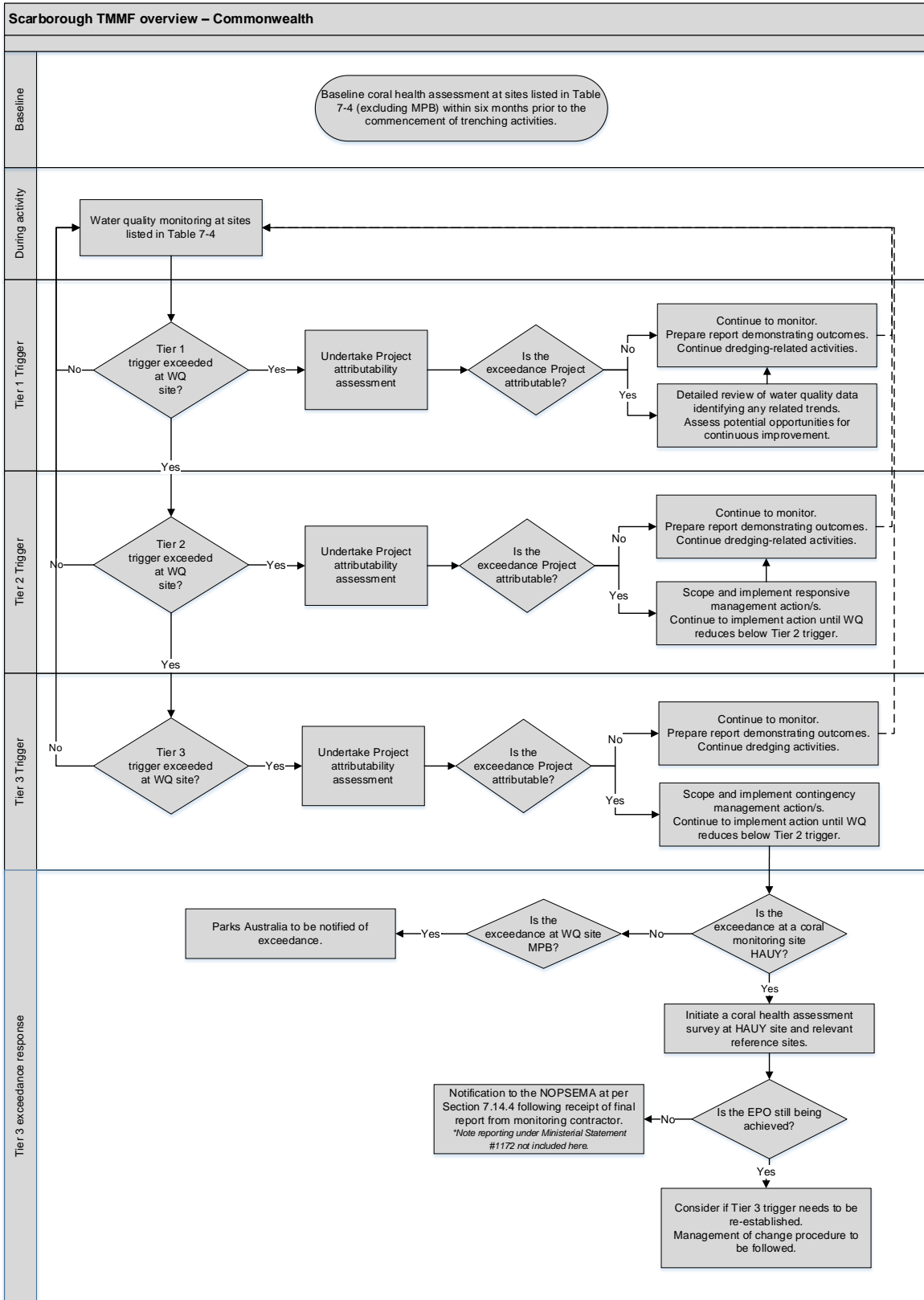


Figure 7-3: Tiered monitoring and management framework overview

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## 7.10.2 Water quality monitoring

Monitoring sites have been selected based on dredge plume modelling outcomes from a suite of pre-existing Pluto LNG Foundation project monitoring locations (where possible). This means in most instances, long term baseline datasets are available to inform the monitoring programs for both water quality and coral community.

Table 7-8 provides a list of the full suite of monitoring sites across both Commonwealth and State activities, with those sites which have particular relevance to the Commonwealth scope detailed within. The Marine Park Boundary monitoring site (MPB) has been selected to ensure that water quality levels within the Dampier Marine Park are managed to a level at which impacts are not predicted to occur to sponge and filter feeder communities (Table 7-7: ). This site has been selected given the marine park values, however the management of water quality to the levels outlined in Table 7-7: is considered to be conservative a given that benthic communities where the Zol overlaps the Marine Park are sparse.

The monitoring sites have been classified as follows:

- **Impact sites:** are reactive monitoring sites where modelling shows there is an intersection of the ZoMI with significant coral habitat (or directly adjacent to). Impact sites include turbidity and light triggers that, if exceeded and are attributable to trenching and spoil disposal, or borrow ground dredging and backfill activities, initiate data review and responsive or contingency management action/s (as applicable to level).
- **Influence sites:** are reactive monitoring sites where modelling shows there is an intersection of the Zol with significant coral habitat or sponge communities (for Dampier Marine Park boundary site). A conservative approach has been taken by categorising sites that fall just outside of the Zol (within 200m of the boundary) as Influence sites.
- These sites may be classified as reference sites where it can be demonstrated they have not been influenced by the dredging plume. Conversely, they may be classed as impact sites if the Tier 2 management trigger is exceeded and attributed to the Project.
- **Reference sites:** are representative sites which are not predicted to be impacted or influenced by the sediment plume. These sites are designed to provide contextual information to inform the assessment of water quality trends and more specifically provide information to support project attributability assessments. Data from these locations will be used, where appropriate, to assess project attributability of tiered trigger exceedances and coral community effects if required.
- **Informative sites (water quality only):** are sites that are predicted to be influenced or impacted by the sediment plume from one activity, however well removed from the other activity (i.e., influenced from trenching and spoil disposal or borrow ground dredging and backfill). Data from these locations will be used, where appropriate, to assess project attributability of coral community effects if required. These sites will not be reactively managed.

The water quality monitoring sites shown in Figure 7-4 and Figure 7-5 will be in place for the duration of the relevant activity (trenching and spoil disposal or borrow ground dredging and backfill activities) providing spatial coverage of areas potentially affected at all times. Note, elevations in turbidity associated with the activity are expected to be spatially confined, extending only to a small portion of the total Zol at any point in time, given the rapid progress of the activity along the trunkline route.

**Table 7-8: Water quality monitoring sites and relevance to Commonwealth activities**

Site	Ecological zone	Approximate Coordinates <sup>55</sup>		Relevance to Commonwealth activities
		Easting	Northing	Not relevant (NR)
CONI	B	476808	7729505	NR
CONI2 <sup>56</sup>	B	476370	7728639	NR
COBN	B	479515	7728801	NR
SUP2	A	473311	7719704	NR
KGBY	A	471969	7717955	NR
SWIT	A	476560	7723855	NR
ANG2	B	477519	7732026	NR
HAUY <sup>56</sup>	B	495637	7739271	Site lies within Zol from borrow ground dredging activities
MIDI	A	463966	7714400	NR
NWIT	A	477052	7725515	NR
FFP1	B	481127	7734025	NR
GIDI	B	478586	7736417	NR
HAM3	B	478089	7746873	Coral site close to Cwlth activities along the trunkline
HGPT <sup>57</sup>	B	467093	7728731	NR
CRTS	B	468703	7737627	Coral site close to Cwlth activities along the trunkline
LANI <sup>57</sup>	B	460932	7739109	Coral site close to Cwlth activities along the trunkline
LEGD	B	483562	7749562	Coral site nearest to Cwlth activities at borrow ground
MAL2	B	462706	7732185	NR
MPB	Offshore	489206	7755467	Site lies within Zol from borrow ground dredging activities

<sup>55</sup> Based on 2022 baseline monitoring program coordinates (where available). These are subject to change based on outcome of reconnaissance survey prior to the deployment of the monitoring systems for the construction phase.

<sup>56</sup> HAUY and CONI2 are new sites that have not been monitored as a part of the Pluto LNG Foundation project. As such, during the pre-dredging baseline survey the site will be assessed and where appropriate established where significant coral communities (>10% cover) exist.

<sup>57</sup> From Pluto LNG Foundation water quality monitoring program as not currently being monitored as a part of the 2022 baseline monitoring program. Site location subject to change as an outcome of reconnaissance survey.

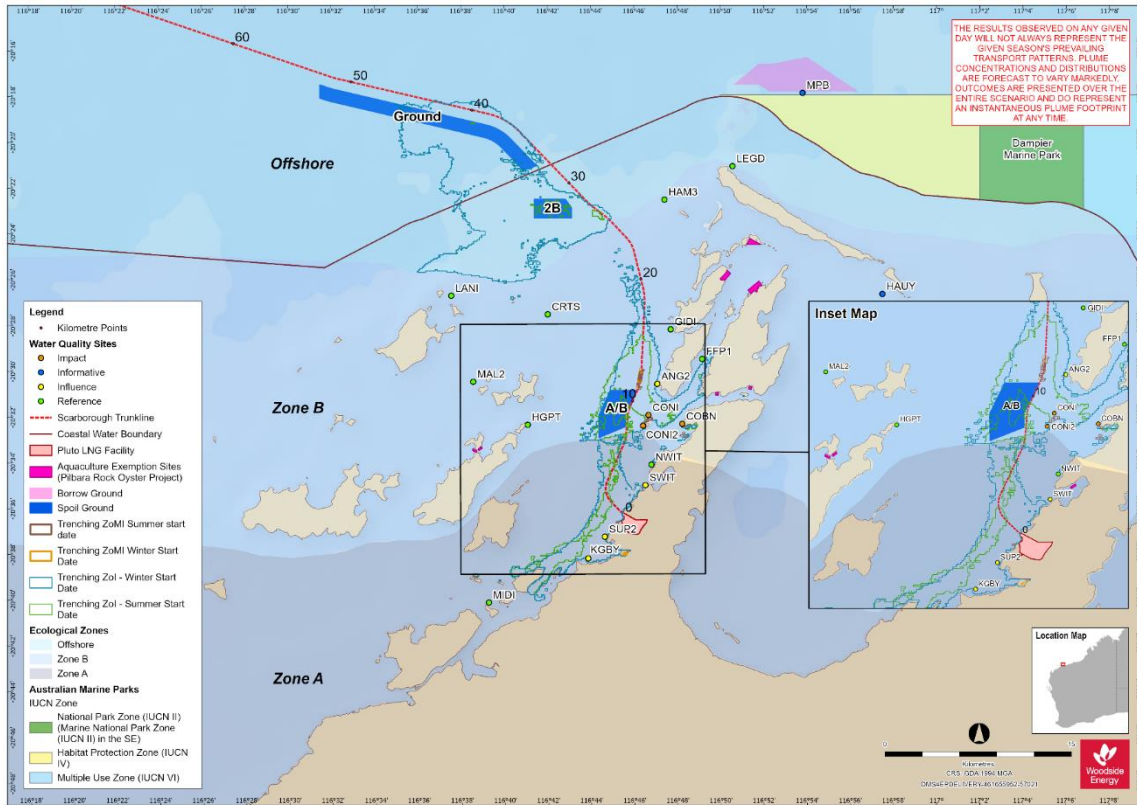


Figure 7-4: Water quality monitoring sites for trenching and spoil disposal operations

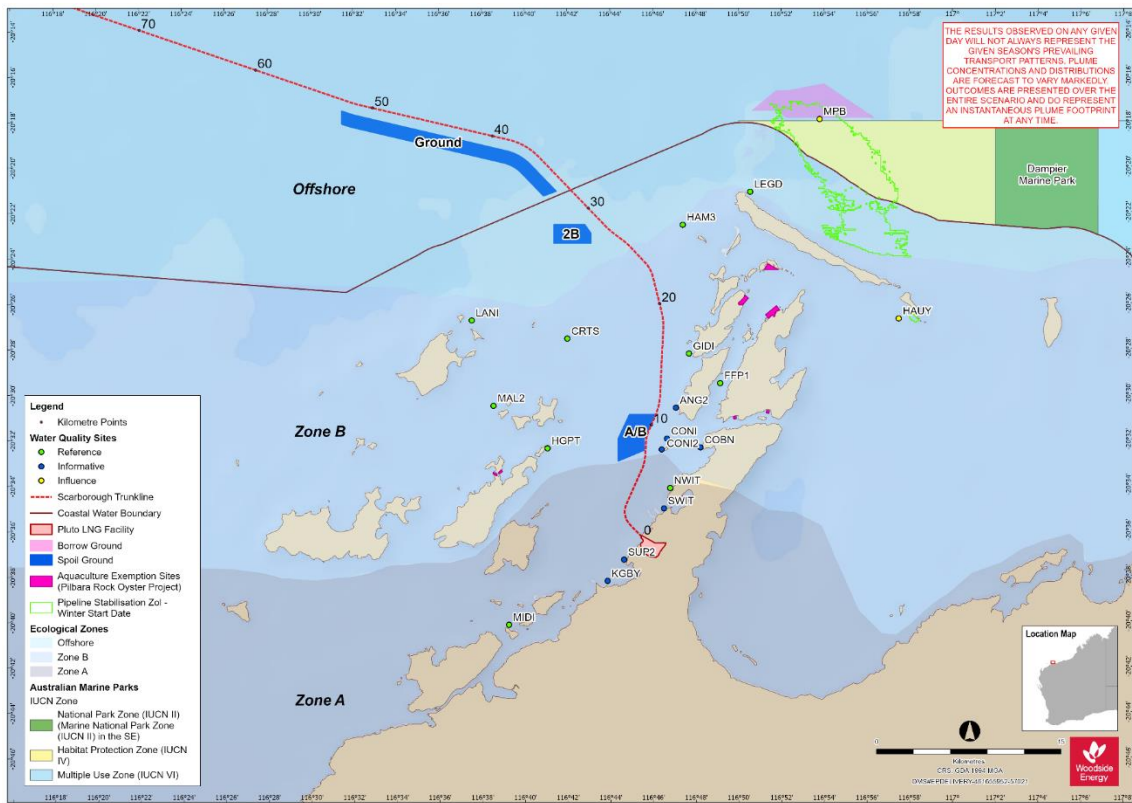


Figure 7-5: Water quality monitoring sites for borrow ground dredging and backfill operations

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The water quality monitoring program relies on near real-time measurements of turbidity and photosynthetic active radiation (PAR), the latter as a measure of daily light integral (DLI). Turbidity and light will be measured at a depth that is most reflective of the conditions which receptors are experiencing. These instrument will be programmed to record every 30 minutes to provide an early insight into the deterioration of water quality (natural or project related). For the light sensors, they will likely be programmed to not record between 20:30 and 03:30 as no light is available between this period and battery and data usage could therefore be optimised. Turbidity and light data will be telemetered at appropriate frequencies to a host website where water quality data can be compared against the tiered trigger levels.

Water quality instruments will be calibrated and maintained in accordance with the manufacturer's recommendations. It is anticipated that during the campaign, there is likely to be some minor loss of data due to equipment failure or fouling. To address this, there will be a maintenance schedule with all instruments systematically retrieved, downloaded, cleaned and redeployed/replaced (as necessary) to maintain the data quality and ensure a high percentage of data collection.

Routine servicing of the water quality monitoring instruments is expected to occur every six to eight weeks to ensure good data quality and minimise the risk of data loss, although this period may be reduced or extended based on the data recorded. An adequate number of replacement instruments will be available where required.

Once collected, all data will be subject to rigorous quality assurance and quality control procedures. Before analysis and use of data in a management trigger assessment, its integrity will be checked and anomalous data will be removed from the dataset in accordance with the best practice methods (such as Jones et al., 2015b; Jones et al., 2016).

The analysis of water quality parameters will use best practice summary statistics and analysis techniques based on outcomes from the WAMSI dredging science node studies, where applicable (e.g., Jones et al. 2015b, Jones et al. 2016). For comparison against tiered trigger levels the following will be calculated.

- PAR: DLI (derived from PAR) and DLI running means (as per durations set out in Table 7-7). Note depending on the depth of the water quality site relevant to depth of the adjacent coral communities, the DLI data may be adjusted to account for the difference.
- Turbidity: NTU and NTU running means (as per durations set out in Table 7-7)

### 7.10.3 Coral community assessment

The objective of the coral community assessment is to provide data that will assist in confirming no detectable net reduction of live coral cover at any of the coral impact monitoring locations attributable to the proposal.

Coral community assessment surveys are proposed within six months before commencing trenching and spoil disposal activities; a reactive survey at the affected site (and associated reference sites) in the event of a project attributable Tier 3 management trigger exceedance; and a post-dredging survey within three months post completion of backfill activities.

The monitoring program has been designed to detect net changes in live coral cover at impact monitoring sites, which are significantly different from natural changes occurring concurrently at reference sites. The statistical design has considered how much coral cover changes naturally from time to time and how that varies among different sites.

A power analysis was completed for testing for a change in coral cover ( $\Delta$  Coral Cover) along each transect between two periods (Before and After) then comparing the average of those transect changes at the impact site against the average across reference sites. Using fixed transects the program has been designed to detect lower absolute changes at an effect size of 13% at an

appropriate level of power (0.8). The proposed monitoring design is based on eight reference sites, and the collection of five fixed ten meter transects at each monitoring site, before and after dredging.

Cover will be estimated for each transect by scoring a set of 30 points applied in a stratified random design to each of the recorded images.

To determine whether there has been a detectable reduction of net live coral cover at impact sites and whether or not project activities are reasonably considered to have caused or contributed to the impact a number of steps will be performed. This includes a One-sided F-test to test if net loss at impact site is significantly greater than changes at reference sites, in addition to a Project attributability assessment.

Where an investigation demonstrates that there has been detectable net reduction of live coral cover at a coral impact monitoring location attributable to the Petroleum Activities Program in Commonwealth waters, NOPSEMA will be notified as per Section 7.17.4.

#### **7.10.4 Dredge plume assessment study**

A dredge plume assessment study is proposed for the TSHD borrow ground dredging activities. The objectives of the dredge plume assessment is to determine the distance from the TSHD at which turbidity associated with the borrow ground dredging activities returns to background levels; and to validate the dredge plume modelling related to TSHD sediment losses.

Data collection is proposed to be undertaken on a representative day during a spring tidal cycle to capture the greatest plume extent.

To confirm the prevailing surface currents and thus the expected trajectory of the dredge plume, a drifter buoy (or similar) will be deployed prior to commencement of sampling. Once the prevailing current has been determined, sampling will be completed to determine the background turbidity levels upstream. This will consist of three turbidity casts at representative locations upstream, and well removed from the activity. Casts of the water column will be completed using a calibrated multiparameter instrument with turbidity and depth sensors (or similar such as acoustic doppler current profiler (ADCP)).

To determine the spatial extent of the dredge plume under representative conditions, water quality profiles will then be collected downstream along three transects radiating out from the TSHD (while dredging) with casts completed approximately every 100 m. Transect 1 aligns with the direction of the dominant current (as determined by the drifter buoy (or similar)) downstream of the TSHD. Transects 2 and 3 should be completed at around 45 degrees from the prevailing current. For transects 1 to 3, water quality profiler casts will continue along the pre-determined bearing from the TSHD until water quality is observed to return to background levels.

To establish a site-specific NTU-TSS relationship and allow TSS measurements to be directly related to turbidity profiles, TSS water samples will also be collected at multiple depths. If an ADCP is being used to infer turbidity instead of a through-water sensor cast, TSS data will be used to calibrate the backscatter signals.

To confirm the appropriateness of the model prediction, a hindcast model run will be completed based on the dredging activity at the time, as well as prevailing metocean conditions. The outputs of the hindcast model results will then be compared to the measured in field turbidity data (converted to SSC mg/L) to verify the validity of the assumptions made in the simulations of TSHD sediment losses.

If dredge plume assessment outcomes suggest that predictive modelling significantly underestimated the plume extent from borrow ground dredging activities, then a desktop assessment will be undertaken to assess the potential risk to nearby receptors such as corals at Madeleine Shoals. This assessment will consider the results of the dredge plume assessment outcomes, nearby site-specific water quality monitoring and where appropriate remote sensing imagery. In the

event that sensitive receptors (such as corals at Madeleine Shoals) are considered at risk of elevated turbidity from borrow ground dredging activities (i.e., above relevant thresholds), adaptive management actions (see Section 7.10.1.2) will be considered to minimise the risk.

### 7.11 Management of Marine Fauna

During daylight hours, trained vessel crew onboard the TSHD will visually assess marine fauna and the following observation and exclusion zones will be adhered to during operation of the TSHD and during disposal of material at the spoil grounds:

- whales: observation zone 300 m; exclusion zone 100 m
- dolphins: observation zone 150 m (except for spoil disposal operations where the observation zone is 300m); exclusion zone 50 m
- dugongs: observation zone 150 m (except for spoil disposal operations where the observation zone is 300m); exclusion zone 50 m
- turtles and sea snakes: observation zone 100 m (except for spoil disposal operations where the observation zone is 300 m); exclusion zone 50 m.

If marine fauna is observed at the spoil grounds, the vessel must move 300 m or more away from the marine fauna before commencing dumping operations.

During transit to and from the spoil grounds or borrow ground, vessels (including the TSHD and split hopper barges) will operate in accordance with EPBC Regulations 2000 – Part 8 Division 8.1.

Figure 7-6 outlines the marine fauna management procedure during dredging.



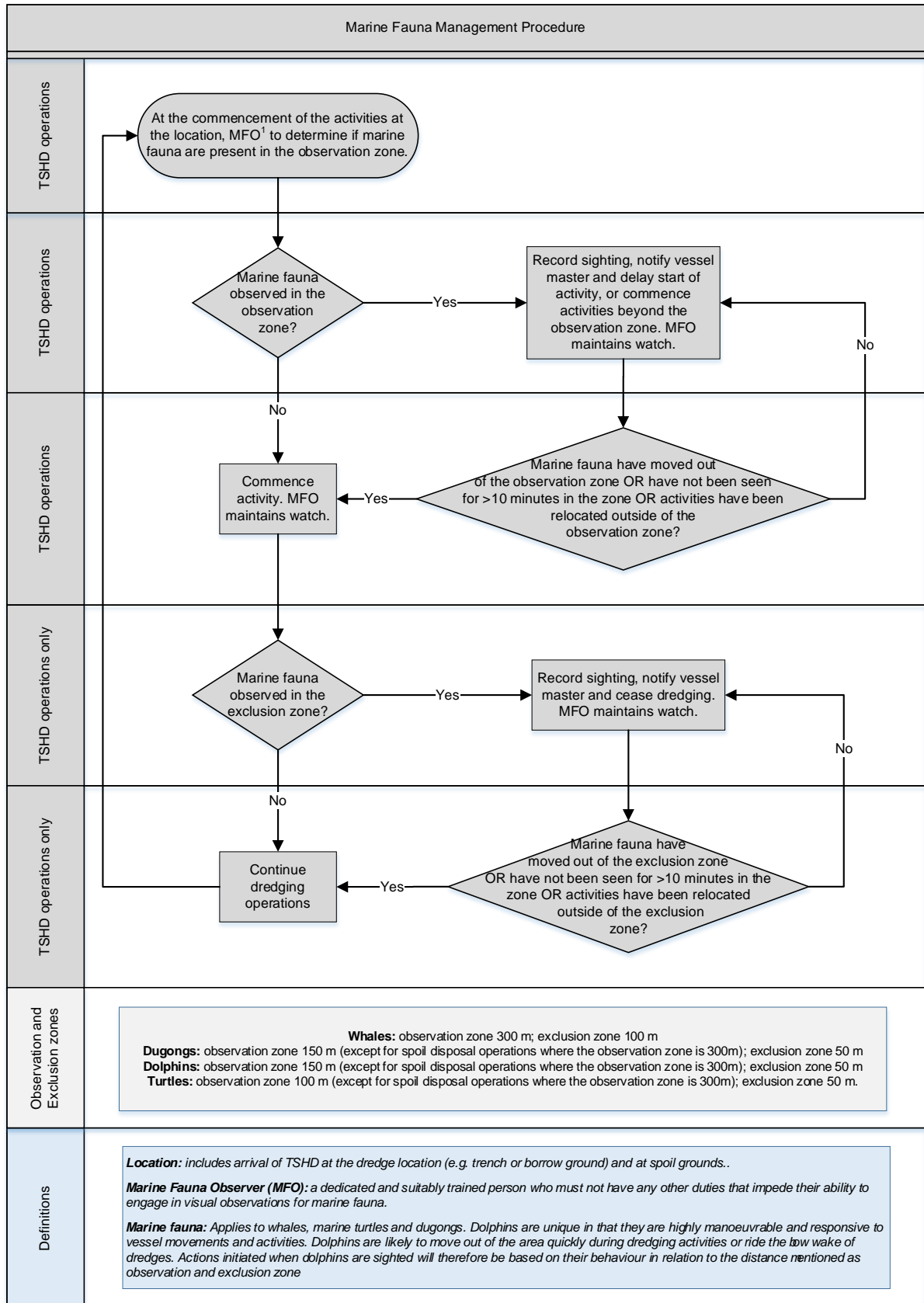


Figure 7-6: Marine fauna management procedure during TSHD operations

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## 7.12 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.

### 7.12.1 Subsea Installation Activities

The following internal auditing will be performed for the subsea scope 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 primary installation vessels associated with the seabed intervention and trunkline installation activities will be audited by Woodside. Support or transport vessels will be assessed on a risk-based approach, but will be audited via the contractor's process.
- At least one operational compliance audit relevant to applicable EP commitments will be conducted by a Woodside Environment Adviser for the seabed intervention and trunkline 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. 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 7.9, 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 7.13.

### 7.12.2 Marine Assurance

All vessels are subject to the Marine Offshore Assurance process and review of the Offshore Vessel Inspection Database (OVID). All required audits and inspections will assess compliance with the

laws of the international shipping industry, which includes safety and environmental management requirements, and maritime legislation including International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 (MARPOL) and other International Maritime Organization (IMO) standards.

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.

### 7.12.3 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.

### 7.13 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 6). Detailed investigations are completed for all categories A, B, C and high potential environmental incidents.

## 7.14 Review

### 7.14.1 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 intervention and trunkline installation), managers review environmental performance regularly, including through quarterly HSE review meetings.

Woodside Environment Team will perform six-monthly reviews of the effectiveness of the implementation strategy and associated tools. This will involve reviewing the:

- Seabed intervention and trunkline installation activities environment KPIs (leading and lagging).
- Tools and systems to monitor environmental performance (detailed in Section 7.9)
- Lessons learned about implementation tools and throughout each campaign.

Reviews of oil spill arrangements and testing are performed in accordance with Section 7.19.

### 7.14.2 Learning and Knowledge Sharing

Learning and knowledge sharing occurs via a number of different methods including:

- Event investigations.
- Event bulletins.
- After action review conducted, 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.

### 7.14.3 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 7.15).

## 7.15 Management of Change and Revision

### 7.15.1 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.

### 7.15.2 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 7.15.1). 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.

### 7.16 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.

### 7.17 Reporting

To meet the EPOs and standards outlined in this EP, Woodside reports at a number of levels, as outlined in the next sections.

## 7.17.1 Routine Reporting (Internal)

### 7.17.1.1 Daily Progress Reports and Meetings

Daily reports for activities are prepared and issued to key support personnel and stakeholders, by relevant managers. The report provides performance information about seabed intervention and trunkline installation activities, health, 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.

### 7.17.1.2 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.

### 7.17.1.3 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.

## 7.17.2 Routine Reporting (External)

### 7.17.2.1 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's approach to ongoing consultation is that feedback and comments received from relevant persons and additional persons continue to be assessed and responded to, as required, through the life of an EP, including during EP assessment and throughout the duration of the accepted EP, in accordance with the intended outcome of consultation (as set out in Section 5)

Woodside proposes to undertake the engagements with directly impacted relevant persons and additional persons listed in Table 7-9. Relevant new information identified during ongoing consultation will be assessed using the EP Management of Knowledge (refer to Section 7.9.2 and Management of Change Process (refer to Section 7.15).

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, additional persons and those who are merely interested in the activities, can otherwise remain up to date on this activity through subscribing to the Woodside website, or by reading the publicly available version of the EP on NOPSEMA's website, where available.

Should consultation feedback be received following EP acceptance that identifies a measure or control that requires implementation or update to meet the intended outcome of consultation (see

Section 5), Woodside will apply its EP Management of Knowledge process (refer to Section 7.9.2) and Management of Change process (refer to Section 7.15), as appropriate.

Woodside has developed a Program of Ongoing Engagement with Traditional Custodians (Appendix L), directly informed by feedback from Traditional Custodians. It provides a mechanism for ongoing dialogue so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the possible consequences of an activity to be carried out under an Environment Plan on their functions, interests and activities as they relate to cultural values.

The ongoing consultation engagements that Woodside intends to progress for this EP are set out in the table below.

**Table 7-9: Ongoing consultation engagements**

Report/ Information	Recipient	Purpose	Frequency	Content
Program of Ongoing Engagement with Traditional Custodians (Appendix L)	Relevant cultural authorities	Identification, assessment and consideration of cultural values relevant to the Operational Area and EMBA	Ongoing	Assessment of cultural values  Any relevant new information on cultural values will be assessed using the EP Management of Knowledge (refer to Section 7.9.2) and Management of Change Process (refer to Section 7.15).
Notification (email)	AHO	As requested by AMSA during consultation.	No less than 4 weeks prior to commencement.	<b>PS 1.3</b> (Section 6.7.1) Date of activity start.
Updates (email)			As required.	Changes to planned activities
Notification (email)	AMSA JRCC	As requested by AMSA during consultation	At least 24-48 hours before operations commence.	<b>PS 1.5</b> (Section 6.7.1) Date of activity start.
Update (email)			Provide updates to the AHO and JRCC should there be changes to the activity.	Changes to planned activities
Notification (email)	DoD	As requested by DoD during consultation	Five weeks prior to commencement of activities.	<b>PS 1.6</b> (Section 6.7.1) Date of activity start.
Notification (email)	DMIRS	To meet DMIRS requirements	At least 10 days prior to commencement	Activity start and end date
Notification (email)	Eni	As requested during consultation	At least 10 days prior to commencement	<b>PS 1.4</b> (Section 6.7.1) Date of activity start and end.
Notification (email)	AFMA Relevant State and Commonwealth Fishery Licence Holders in the Operational Area (North West Slope and Trawl	Good practice	At least 10 days prior to commencement and following completion of activities.	<b>PS 1.4</b> (Section 6.7.1) Date of activity start and end.

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Report/ Information	Recipient	Purpose	Frequency	Content
	Fishery, Western Deepwater Trawl Fisher, Mackerel Managed Fishery (Area 2 and 3), Marine Aquarium Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Crab Managed Fishery, Pilbara Trawl Managed Fishery, Pilbara Trap Managed Fishery, Specimen Shell Managed Fishery, Pilbara Line Fishery, Western Australia Sea Cucumber Fishery, West Coast Deep Sea Crustacean Managed Fishery, Onslow Prawn Managed Fishery) Recfishwest WAFIC CFA DPIRD DAFF - Fisheries			
Meeting	MAC	Development of recommendations following new heritage information as it arises.	As required following new heritage information.	<b>PS 16.7</b> and <b>PS 16.8</b> (Section 6.10) Recommendations for appropriate heritage management.
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 (refer to Section 7.9.2) and Management of Change Process (refer to Section 7.15).
Notification (email)	WA Museum (as requested during EP consultation) Australasian Underwater Cultural Heritage Database Any other stakeholders as required in the Unexpected Finds Procedure ( <b>Section 7.7</b> )	Report any unexpected finds of potential Underwater Cultural Heritage	If triggered by Unexpected Finds Procedure (Section 7.7)	Refer to Unexpected Finds Procedure (Section 7.7) and C2.12

### 7.17.2.2 Start and End Notifications of the Petroleum Activities Program

In accordance with Regulation 29, Woodside will notify NOPSEMA and DMIRS of the commencement of the Petroleum Activities Program at least ten days before the activity commences, and will notify NOPSEMA and DMIRS within ten days of completing the activity.

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### 7.17.2.3 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 7-10.

**Table 7-10: Routine external reporting requirements**

Report	Recipient	Frequency	Content
Monthly Recordable Incident Reports (Appendix D)	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).
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.
Notification to Director of National Parks	DNP	Approximately 10 days prior to entering the Montebello Marine Park and at the conclusion of activities within the Australian Marine Park.	Notifications can be made to marineparks@environment.gov.au

### 7.17.2.4 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.

### 7.17.3 Incident Reporting (Internal)

The process for reporting environmental incidents is described in Section 7.17.4 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.

### 7.17.4 Incident Reporting (External) – Reportable and Recordable

#### 7.17.4.1 Reportable Incidents

##### 7.17.4.1.1 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 or 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 Appendix A and Section 6)).

The environmental risk assessment (Section 6) for the Petroleum Activities Program identifies those risks with a potential consequence level of C+ for environment. The environmental risk assessment identified one risk with a potential consequence level of C+ for environment. The highest consequence identified in the risk assessment was a *Loss of hydrocarbons to marine environment due to a vessel collision*, with a consequence level of B for environment.

Any such incidents (with a Consequence Level of Moderate (C)) 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.

#### **7.17.4.1.2 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 D) 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.

#### **7.17.4.2 Recordable Incidents**

##### **7.17.4.2.1 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'.

##### **7.17.4.2.2 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 D) 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.

#### **7.18 Other External Incident Reporting Requirements**

In addition to the notification and reporting of environmental incidents defined under the Environment Regulations and Woodside requirements, Table 7-11 describes the incident reporting requirements that also apply in the Operational Area.

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 Oil Pollution First Strike Plan (refer to Appendix J).

Woodside prioritises engagement with those persons who may be directly affected, either by the incident itself or in relation to the regulatory or decision-making capacity with respect to incident response. Should it be identified that additional persons such as, but not limited to, commercial fishers, tourism operators or relevant cultural authorities who may be affected within the EMBA, Woodside would, at the relevant time, engage with these parties as appropriate.

**Table 7-11: 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	<a href="mailto:reports@amsa.gov.au">reports@amsa.gov.au</a>
Oil pollution incidents in Commonwealth waters	Vessel Master	AMSA Rescue Coordination Centre (RCC)	As per Article 8 and Protocol I of MARPOL within two hours via the national emergency 24-hour notification contacts and a written report within 24 hours of the request by AMSA	AMSA RCC Australia	If the ship is at sea, reports are to be made to: Free call: 1800 641 792 Phone: 08 9430 2100 (Fremantle)
Oil pollution incidents in Commonwealth waters	Vessel Master	AMSA	Without delay as per Protection of the Sea Act, part II, section 11(1), AMSA RCC notified verbally via the national emergency 24-hour notification contact of the hydrocarbon spill; follow up with a written Pollution Report ASAP after verbal notification	RCC Australia	Phone: 1800 641 792 or +61 2 6230 6811 AFTN: YSARYCYX
Any oil pollution incident which has the potential to enter a National Park or requires oil spill response activities to be conducted within a National Park	Vessel Master	DCCEEW	Reported verbally, ASAP	Director of National Parks	Phone: 02 6274 2220
Activity causes unintentional death of or injury to fauna species listed as Threatened or Migratory under the EPBC Act	Woodside	DCCEEW	Within seven days of becoming aware	Secretary of the DCCEEW	Phone: 1800 803 772 Email: <a href="mailto:protected.species@environment.gov.au">protected.species@environment.gov.au</a>
Any emergency, accident, hazardous situation, near miss and/or any pollution incident in or with potential to impact PPA waters	Vessel Master	PPA	All incidents and near misses on a vessel must be reported to PPA Dampier Vessel Traffic Services (VTS) immediately It is a PPA requirement that the any incident or near miss shall prepare a report and send	PPA Dampier Vessel Traffic Services	VHF 11 (Port vessel working channel) VHF 16 (Port vessel emergency channel) (08) 9159 6556 (landline telephone) 0428 888 800 (24 hour emergency mobile telephone)

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Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
			to PPA (dampier.vts@pilbaraports.com.au) within 48 hours		dampier.vts@pilbaraports.com.au

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Uncontrolled when printed. Refer to electronic version for most up to date information.

The following pollution activities should also be reported to AMSA via RCC Australia by the Vessel Master are:

- 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.

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.

## 7.19 Emergency Preparedness and Response

### 7.19.1 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 7-12.

**Table 7-12: 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)	<p>EP: Woodside’s oil pollution emergency plan has the following components:</p> <ul style="list-style-type: none"> <li>• <a href="#">Woodside Oil Pollution Emergency Arrangements (Australia)</a></li> <li>• Oil Pollution First Strike Plan (Appendix J)</li> <li>• Oil Spill Preparedness and Response Mitigation Assessment (Appendix D)</li> </ul> <p>In accordance with Regulation 31 of the Environmental Regulations the <a href="#">Woodside Oil Pollution Emergency Arrangements (Australia)</a> was provided with the Julimar Phase 2 Drilling and Subsea Installation EP, accepted by NOPSEMA on 8 November 2019.</p>
Details the arrangements for responding to and monitoring oil pollution (to inform response activities), including control measures	Regulation 14(8AA)	<p>Oil Spill Preparedness and Response Mitigation Assessment (Appendix D)</p> <p>Oil Pollution First Strike Plan (Appendix J)</p>
Details the arrangements for updating and testing the oil pollution response arrangements	Regulation 14(8), (8A), (8B), (8C)	<p>EP: Section 7.19.5</p> <p>Oil Spill Preparedness and Response Mitigation Assessment (Appendix D)</p>
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)

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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)	<a href="#">Oil Pollution Emergency Arrangements (Australia)</a>

### 7.19.2 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 (Table 7-13). 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 7-13: Minimum levels of competency for key IMT positions**

IMT Position	Minimum Competency
Corporate Incident Coordination Centre (CICC) Leader	<ul style="list-style-type: none"> <li>Incident and Crisis Leadership Development Program (ICLDP)</li> <li>Oil Spill Response Skills Enhancement Course (OSREC – internal course)</li> <li>Participation in L2 oil spill exercise (initial)</li> <li>Participation in L2 oil spill exercise (refresher)</li> </ul>
Security and Emergency Manager Duty Manager	<ul style="list-style-type: none"> <li>ICLDP</li> <li>OSREC</li> <li>IMO2 or equivalent spill response specialist level with an oil spill response organisation (OSRO)</li> <li>Participation in L2 oil spill exercise (initial)</li> <li>Participation in L2 oil spill exercise (refresher)</li> </ul>
Operations, Planning, Logistics, Safety	<ul style="list-style-type: none"> <li>OSREC</li> <li>ICC Fundamentals Course (internal course)</li> <li>Participation in L2 oil spill exercise (initial)</li> <li>Participation in L2 oil spill exercise (refresher)</li> </ul>
Environment Coordinator	<ul style="list-style-type: none"> <li>ICC Fundamentals</li> <li>OSREC</li> <li>IMO2 or equivalent spill response specialist level with an OSRO</li> <li>Participation in L2 oil spill exercise (initial)</li> <li>Participation in L2 oil spill exercise (refresh)</li> </ul>

**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, IMO I 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 IMO I 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).

### 7.19.3 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 vessels 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.

### 7.19.4 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 J) which provides tactical response guidance to the activity/area and Appendix D 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 J).

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.

### **7.19.5 Emergency and Spills Response**

Woodside categorises incidents and emergencies in relation to response requirements as follows:

#### **7.19.5.1 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.

#### **7.19.5.2 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.

#### **7.19.5.3 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.

### **7.19.6 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 7-14. 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 7-14: Testing of response capability**

Response Category	Scope	Response Testing Frequency	Response Testing Objective
<b>Level 1 Response</b>	Exercises are project-/ activity-specific <sup>1</sup>	At least one Level 1 First Strike drill must be conducted during an activity. For campaigns with an operational duration of greater than one month this will occur within the first two weeks of commencing the activity and then at least every 6 month hire period thereafter.	Comprehensive exercises test elements of the <i>Seabed Intervention and Trunkline Installation</i> Oil Pollution First Strike Plan (Appendix J). Emergency drills are scheduled to test other aspects of the Emergency Response Plan.
		At least one Level 1 First Strike notification drill must be conducted prior to commencement of activity in the vicinity of another Titleholder's operating assets i.e. third party pipeline crossings.	Test notifications to other Titleholders per <i>Seabed Intervention and Trunkline Installation</i> Oil Pollution First Strike Plan (Appendix J).
<b>Level 2 Response</b>	Exercises are vessel specific <sup>2</sup>	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.
<b>Level 3 Response</b>	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.

<sup>1</sup> Please note that for this EP, Level 1 drills will be applicable to PV, SWLB, TSHD and RIV

<sup>2</sup> Please note that for this EP, Level 2 exercises will be applicable to PV only

### 7.19.7 Hydrocarbon Spill Response Testing of Arrangements

Woodside is required to test hydrocarbon spill response arrangements as per regulations 8B and 8C of the Environment Regulations. 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 7-14, up to eight formal exercises are planned annually, across Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

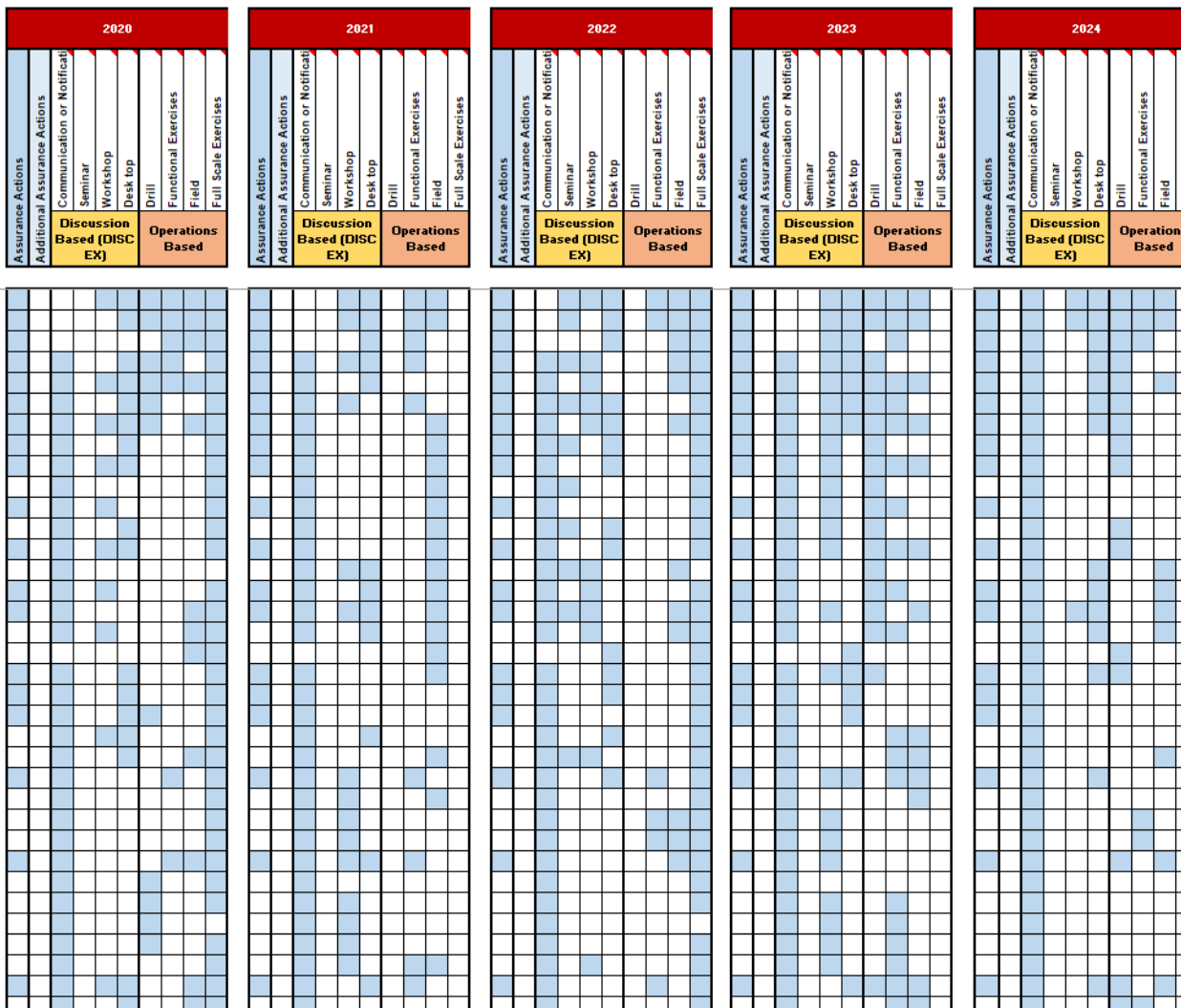
#### **7.19.7.1 Testing of Arrangements Schedule**

Woodside's Testing of Arrangements Schedule (Figure 7-7) aligns with international good practice for spill preparedness and response management; the testing is compatible with the IPIECA Good Practice Guide and the Australian Emergency Management Institute Handbook. If a spill occurs, enacting these arrangements will underpin Woodside's ability to implement a response across its petroleum activities. Figure 7-7 shows a condensed snapshot of Woodside's 5-year rolling Testing of Arrangements Schedule.

HSP TESTING OF ARRANGEMENTS SCHEDULE  
WOODSIDE ID: 10058092

**5 YEAR ROLLING SCHEDULE**

Arrangement	Support Agency / Company	Area to be tested
1	WEL	Personnel
2	WEL	Equipment
3	WEL	Vessel acquisition - internal processes
4	AMOSC	Equipment
5	AMOSC	Personnel
6	OSRL	Equipment
7	OSRL	Personnel
8	Worley Parsons	Equipment
9	Worley Parsons	Personnel
10	ERM	Equipment
11	ERM	Personnel
12	Jacobs	Equipment
13	Jacobs	Personnel
14	AMSA	Equipment
15	AMSA	Personnel
16	DDT (Department of Transport)	Equipment
17	DDT (Department of Transport)	Staging Area Support
18	WEL	Predictive Modelling - Rapid Assessment Tool
19	RPS APASA	Predictive Modelling
20	KSAT	Satellite remote sensing
21	Bristow s	Aircraft
22	MSRC	Personnel
23	Sci Aero	Equipment and Personnel
24	Centurion	Logistics Support
25	Harold E Holt	Support and Access
26	Fergusons	Equipment
27	Swires	Equipment
28	Toll Mermaid	Staging Area Support
29	Norwest Air Works	Dispersant Aircraft (access and support)
30	Exmouth Aerodrome	Dispersant Aircraft (access and support)
31	Broomer International Airport	Dispersant Aircraft (access and support)
32	Leamouth Airport	Dispersant Aircraft (access and support)
33	Exmouth Freight and Logistics	Logistics Support
34	Veolia	Equipment and Personnel
35	FRS	Equipment and Personnel



**Figure 7-7: Indicative 5-yearly testing of arrangements schedule**

(Snapshot of a selection of oil spill response arrangements tested annually; Note: schedule is subject to change; additional detail is included in the live document)

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Numbered hydrocarbon spill arrangements listed in the rows of the schedule are taken from the support plans and operational plans described in Section 1.4 of Appendix D. 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. About 75 hydrocarbon spill preparedness arrangements are tested annually across the eight planned exercises, as described above.

The vertical columns under each year in Figure 7-7 relate to an individual exercise or additional assurance actions that are conducted over the 5-year rolling schedule. The sub-heading for the column describes the standard method of testing (e.g. discussion exercise, desktop exercise), and the blue cells indicate the arrangements that could be tested for each method.

Arrangements in the schedule are tested at least once a year; however, 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) (refer to the first and second vertical columns for each year in Figure 7-7).

### 7.19.7.2 Exercises, Objectives, and KPIs

Exercises are designed to cumulatively provide assurance for all arrangements within Woodside's Testing of Arrangements Schedule annually across all facilities. Exercise-initiating scenarios are derived from the worst-case credible scenarios as described in the relevant facility's First Strike Plans.

Objectives and KPIs for each exercise are determined by reviewing:

- The Testing of Arrangements Schedule, which identifies which arrangements can be tested for each testing method (Section 7.19.7.1).
- The objectives and KPIs master generic plan, which summarises generic objectives and KPIs that could be tested for specific response strategies, based on industry good practice guidance (i.e. IPIECA) for testing oil spill arrangements.
- The oil spill ALARP commitments register, which summarises all spill response commitments from accepted EPs (e.g. timings, numbers) for different response strategies, and considers priority commitments and worst-cast spill scenarios.
- Actions undertaken from recommendations from previous exercises, where relevant.

The required capabilities, number of personnel, equipment, and timeframes (i.e. arrangements) form specific KPIs during an exercise. Where this is the case, the ALARP commitments register indicates the specific response strategy performance standards to use/test the arrangements against. Where relevant the most stringent performance standard across all in-force EPs is used as the KPI. After each exercise, a report is produced that includes recommendations for improvements, which are then converted to actions and tracked in the Testing of Arrangements Register.

Additional assurance actions are also routinely undertaken outside formal exercises (e.g. response audits, no-notice drills), which support testing of these arrangements. Evidence and outcomes from additional assurance actions are used, where relevant, to support testing individual arrangements, including from external sources (e.g. evidence of suppliers testing their own arrangements).

### 7.19.7.3 Cyclone and Dangerous Weather Preparation

As the timing of some activities associated with the Petroleum Activities Program are not yet determined, it is possible seabed intervention and trunkline installation activities will overlap with the cyclone season (November to April, with most cyclones occurring between January and March). If conducting 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).

## 8 REFERENCES

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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
3D seismic data	A set of numerous closely-spaced seismic lines that provide a high spatially sampled measure of subsurface reflectivity and 3D 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 stakeholders have been considered by assessment of costs and benefits, and which identifies a preferred course of action
API (gravity)	A measure of how heavy or light a petroleum liquid is compared to water
Australian Standard	An Australian Standard that provides criteria and guidance on design, materials, fabrication, installation, testing, commissioning, operation, maintenance, re-qualification and abandonment
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 worst-case 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 stone-like, 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
Datum	A reference location or elevation that is used as a starting point for subsequent measurements
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

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Term	Meaning
dB re 1 $\mu\text{Pa}^2$	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 $\text{mPa}^2/\text{Hz}$ ), 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.
dB re 1 $\mu\text{Pa}^2.\text{s}$	Normal unit for sound exposure level
Demersal	Living close to the floor of the sea (typically of fish)
Drill casing	Tubing that is set inside the drilled well to protect and support the well stream
Drilling fluids	The main functions of drilling fluids include providing hydrostatic pressure to prevent formation fluids from entering the well bore, keeping the drill bit cool and clean during drilling, performing drilled cement, and suspending the drilled cement while drilling is paused and when the drilling assembly is brought in and out of the hole. The drilling fluid used for a particular job is selected to avoid formation damage and to limit corrosion.  The three main categories of drilling fluids are water-based muds (which can be dispersed and non-dispersed), non-aqueous muds, usually called oil-based mud, and gaseous drilling fluid, in which a wide range of gases can be used.
DRIMS	Woodside's internal document management system
Dynamic positioning	In reference to a marine vessel that uses satellite navigation and radio transponders in conjunction with thrusters to maintain its position
EC <sub>50</sub>	The concentration of a drug, antibody or toxicant which induces a response halfway between the baseline and maximum after a specified exposure time
Echinoderms	Any of numerous radially symmetrical marine invertebrates of the phylum Echinodermata, which includes the starfish, 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)
EP	Prepared in accordance with the <i>OPGGS (Environment) Regulations 2009</i> , which must be assessed and accepted by the Designated Authority (NOPSEMA) before any petroleum-related activity can be performed
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 Hazard	The characteristic of an activity or event that could potentially cause damage, harm or adverse effects on the environment
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 <i>Environmental Impact Assessment Administrative Procedures 2010</i> )
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> . 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

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<b>Term</b>	<b>Meaning</b>
Flora	Collectively, the plant life of a particular region
IC <sub>50</sub>	A measure of the effectiveness of a compound in inhibiting biological or biochemical function
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.
Jig Fishing	Fishing with a jig, which is a type of fishing lure. A jig consists of a lead sinker with a hook moulded into it and usually covered by a soft body to attract fish.
LC <sub>50</sub>	The concentration of a substance that is lethal to 50% of the population exposed to it for a specified time
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
NOHSC (1008:2004)	National Occupational Health and Safety Commission – Approved Criteria for Classifying Hazardous Substances
Oligotrophic	Low in plant nutrients and having a large amount of dissolved oxygen throughout
pH	Measure of the acidity or basicity of an aqueous solution
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.
Stereo-BRUVS	Stereo-baited remote underwater video systems
Sessile	Organism that is fixed in one place; immobile
Syngnathids	Family of fish which includes the seahorses, the pipefish, and the weedy and leafy sea dragons
Teleost	A fish belonging to the Teleostei or Teleostomi, a large group of fish with bony skeletons, including most common fish. The teleosts are distinct from the cartilaginous fish such as sharks, rays, and skates.
Thermocline	A temperature gradient in a thermally stratified body of water
Zooplankton	Plankton consisting of small animals and the immature stages of larger animals

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## 9.2 Abbreviations

Abbreviation	Meaning
µm	Micrometer
AHC	Active Heave Compensated
AHO	Australian Hydrographic Office
AIIMS	Australasian Inter-service Incident Management Systems
AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable
AMOSC	Australian Marine Oil Spill Centre
AMPS	Australian Marine Parks
AMSA	Australian Maritime Safety Authority
API	American Petroleum Institute
ATSB	Australian Transport Safety Bureau
AusSAR	Australian Search and Rescue
AUV	Autonomous Underwater Vehicle
Bbl/MMscf	Barrels per million Standard Cubic Feet of gas
BCF	Bioconcentration Factor
BCH	Benthic Communities and Habitat
BHP	BHP Billiton Petroleum (North West Shelf) Pty Ltd
BIA	Biologically Important Area
BoM	Bureau of Meteorology
BTEX	Benzene, toluene, ethylbenzene and xylenes
°C	Degrees Celsius
(C)	Consequence level of moderate
C	Control
CAES	Catch and Effort System
CCP	Cyclone Contingency Plan
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CH <sub>4</sub>	Methane
CICC	Corporate Incident Coordinate Centre
CM	Control Measure
CMT	Crisis Management Team
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
cP	Centipoises
CS	Cost/Sacrifice
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cth	Commonwealth
CWP	Central Western Province
CWST	Central Western Shelf Transition

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Abbreviation	Meaning
(D)	Consequence level Minor
DAA	Department of Aboriginal Affairs
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEWHA	Department of Environment, Water, Heritage and the Arts
DGPS	Differential GPS
DHSC	Deep History of Sea Country
DMA	Dead Man Anchor
DMIRS	Department of the Responsible State Minister
DMP	Department of Mines and Petroleum
DNP	Director of National Parks
DP	Dynamically Positioned
DPIRD	Department of Primary Industries and Regional Development
DSDMP	Dynamic System Development Method
(E)	Slight Risk Consequence
E and P	Exploration and Production
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)
EMBA	Environment that May Be Affected
EMS	Environmental Management System
ENVID	Environmental hazard Identification
EP	Environment Plan
EPA	Environmental Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
EPO's	Environmental Performance Outcomes
EPS	Environmental Performance Standards
ERP	Emergency Response Plan
ESD	Ecologically Sustainable Development
(F)	Negligible risk consequence
F	Control Feasibility
FCGT	Flood, Clean, Gauge and Hydrotest
FEED	Front End Engineering Design
F-Pil	Flatback-Pilbara (marine turtle genetic stock)
FPU	Floating Production Unit
FPV	Fall Pipe Vessel
G-NWS	Green-North West Shelf (marine turtle genetic stock)
GDA	Geocentric Datum of Australia
GHG	Greenhouse gas
g/m <sup>2</sup>	Grams per square metre
HFCs	Hydrofluorocarbon

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Abbreviation	Meaning
HFO	Heavy fuel oil
HOCNF	Harmonised Offshore Chemical Notification Format
HSE	Health, Safety and Environment
HSPU	Hydrocarbon Spill Preparedness Unit
HQ	Hazard Quotient
H-WA	Hawksbill-Western Australia (marine turtle genetic stock)
IAPP	International Air Pollution Prevention
IC	Incident Controller
ICC	Incident Coordination Centre
ICLDP	Incident Crisis Leadership Development Program
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMO	International Marine Organisation
IMS	Invasive Marine Species
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environmental Conservation Association
IS	Implementation Strategy
ISO	International Organization for Standardization
ISPP	International Sewage Pollution Prevention
ITF	Indonesian Throughflow
ITOPF	International Tank Owners Pollution Federation Limited
IUCN	International Union for Conservation of Nature
JSA	Job Safety Assessment
JRCC	Joint Rescue Coordination Centre
KEF	Key Ecological Feature
Kg/m <sup>3</sup>	Kilograms per metre cubed
Km	Kilometres
KP	Kilometre Point
KPI	Key Performance Indicator
LBL	Long Baseline
LED	Light emitting diode
LH-WA	Loggerhead-Western Australia (marine turtle genetic stock)
L/km <sup>2</sup>	Litres per square Kilometre
MARPOL	International Convention for the Prevention of Pollution from Ships
MBES	Multi Beam Echo Sounders
MCs	Measurement Criteria
MDO	Marine Diesel Oil
MEG	Mono-ethylene Glycol
MFE	Mass Flow Excavator
MFO	Marine Fauna Observers

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Abbreviation	Meaning
MGA	Map Grid of Australia
MGO	Magnesium Oxide
MMA-WHA	Marine Management Area - World Heritage Area
MMSI	Maritime Mobile Service Identity
MNES	Matters of National Environmental Significance
MOC	Management of Change
MODU	Mobile Offshore Drilling Unit
MP	Marine Park
MPA	Marine Protected Areas
MSIN	Maritime Safety Information Notifications
MUZ	Multiple Use Zone
N/A	Not Applicable
NDE	Non-destructive examination
NERA	National Energy Resources Australia
NHP	National Heritage Places
NIMS	Non-indigenous Marine Species
N <sub>2</sub> O	Nitrous oxide
NOAA	National Oceanic and Atmospheric Administration
NOEC	No-Observed-Effect Concentrations
NOx	Oxides of nitrogen
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Title Administrator
NTM	Notice to Mariners
NWMR	North-west Marine Region
NWP	Northwest Province
NWSP	North West Shelf Province
NWS Project	North West Shelf Project
NWSTF	North West Slope Trawl Fishery
NWT	North West Transition
OCNS	Offshore Chemical Notification Scheme
OCV	Offshore Construction Vessel
OILMAP	Oil Spill Prediction Modelling System
OIM	Offshore Installation Manager
OIW	Oil In Water
OPEP	Oil Pollution Emergency Plan
OPGGS	Offshore Petroleum and Greenhouse Gas Storage Act 2006
OPP	Offshore Project Proposal
OSPAR Convention	Oslo and Paris Commission for the Convention for the Protection of the Marine Environment of the North-East Atlantic

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<b>Abbreviation</b>	<b>Meaning</b>
OSREC	Oil Spill Response Skills Enhancement Course
OSRO	Oil Spill Response Organisation
OVID	Offshore Vessel Inspection Database
OVSMA	Offshore Vessel Safety Management System Assessment
PBA	Pre-emptive Baseline Areas
PFCs	Perfluorocarbon
pH	Power of hydrogen
PV	Pipelay Vessel
PLET	Pipeline End Termination
PM10	Particulate matter less than 10 microns
PMST	Protected Matters Search Tool
ppm	Parts Per Million
PS	Performance Standards
RCC	Rescue Coordination Centre
RIV	Rock Installation Vessel
RO	Reverse Osmosis
ROV	Remotely Operated Vehicle
SBP	Sub Bottom Profiler
SEEP	Ship Energy Efficiency Management Plan
SF6	Sulphur hexafluoride
SIMAP	Spill Impact Mapping and Analysis Program
SMPEP	Spill Monitoring Programme Execution Plan
SO <sub>2</sub>	Sulphur dioxide
SOLAS	Safety of Life at Sea
SOPEP	Ship Oil Pollution Emergency Plan
SSCs	Suspension Sediment Concentrations
SSS	Side Scan Sonar
SWLB	Shallow Water Lay Barge
TAP	Marine Debris Threat Abatement Plan
TSHD	Trailing Suction Hopped Dredge
UCH	Underwater Cultural Heritage
UK	United Kingdom
US	United States
USBL	Ultra-short baseline
UWA	University of Western Australia
VOCs	Non-methane volatile organic compounds
WAF	Water Accommodated Fractions
WAMSI	Western Australian Marine Science Institution
WCC	Woodside Communication Centre

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<b>Abbreviation</b>	<b>Meaning</b>
Woodside	Woodside Energy Ltd
WHA	World Heritage Area
WHP	World Heritage Place
WLS	Woodside Learning Services
WMS	Woodside Management System
ZoI	Zone of Influence
ZoMI	Zone of Moderate Impact
ZoHI	Zone of High Impact

## APPENDIX A WOODSIDE POLICIES

### WOODSIDE POLICY



### Environment and Biodiversity Policy

#### OBJECTIVE

Woodside recognises the intrinsic value of nature and the importance of conserving biodiversity and ecosystem services to support the sustainable development of our society. We are committed to doing our part. We understand and embrace our responsibility to undertake activities in an environmentally sustainable way.

#### PRINCIPLES

Woodside commits to:

- Implementing a systematic approach to the management of the impacts and risks of our operating activities on an ongoing basis, including emissions and air quality, discharge and waste management, water management, biodiversity and protected areas.
- Applying the mitigation hierarchy principle (avoid, minimise, restore) and a continuous improvement approach to ensure we maintain compliance, improve resource use efficiency and reduce our environmental impacts.
- Embedding environmental and biodiversity management, and opportunities, in our business planning and decision making processes.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Not undertaking new exploration or development of hydrocarbons within the boundaries of natural sites on the UNESCO World Heritage List (as specified at 1 December 2022). Existing activity may continue if compatible with maintenance of the listed outstanding universal values.
- Not undertaking new exploration or development of hydrocarbons within IUCN Protected Areas (as specified at 1 December 2022) unless compatible with management plans in place for the area. Existing activity may continue if compatible with management plans in place for the area.
- Achieving net zero deforestation<sup>1</sup> 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.*

<sup>1</sup> Definition of Forest: 'trees higher than 5 meters and a canopy cover of more than 10 percent on the land to be cleared'

## Health and Safety Policy

### OBJECTIVES

At Woodside we believe that process and personal safety related incidents, and occupational illnesses are preventable. We strive to be an industry leader in health and safety and are committed to managing our activities to minimise adverse health and safety risk related impacts.

### PRINCIPLES

Woodside will achieve this by:

- Implementing a systematic approach to health, personal safety, and process safety risk management.
- Maintaining a culture in which everybody is aware of their health and safety obligations and are empowered to speak up and intervene on health and safety issues.
- Identifying current and emerging hazards across the value chain activities to reduce risks to as low as reasonably practicable.
- Embedding health and safety management in our business planning and decision-making processes.
- Integrating health, personal safety and process safety requirements when designing, purchasing, constructing, and modifying equipment and facilities including requiring our contractors to comply with our HSE expectations in a mutually beneficial manner.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Setting targets and publicly reporting on our health and safety performance to help us continually improve.

### APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside leaders are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

*Revised by the Woodside Energy Group Ltd Board in December 2022*

APPROVED

## Risk Management Policy

### OBJECTIVES

Woodside recognises that risk is inherent in our business and the effective management of risk is vital to deliver our strategic objectives, continued growth and success. We are committed to managing risks in a proactive and effective manner as a source of competitive advantage.

Our approach protects us against potential negative impacts, enables us to take risk for reward and improves our resilience against emerging risks. The objective of our risk management framework is to provide a single consolidated view of risks across the company to understand our full risk exposure and prioritise risk management and governance.

The success of our approach lies in the responsibility placed on everyone at all levels to proactively identify, assess and treat risks relating to the objectives they are accountable for delivering.

### PRINCIPLES

Woodside achieves these objectives by:

- Applying a structured and comprehensive framework for the identification, assessment and treatment of current risks and response to emerging risks;
- Ensuring line of sight of financial and non-financial risks at appropriate levels of the organisation;
- Demonstrating leadership and commitment to integrating risk management into our business activities and governance practices;
- Recognising the value of stakeholder engagement, best available information and proactive identification of potential changes in external and internal context;
- Embedding risk management into our critical business processes and control framework;
- Understanding our exposure to risk and tolerance for uncertainty to inform our decision making and assure that Woodside is operating with due regard to the risk appetite endorsed by the Board; and
- Evaluating and improving the effectiveness and efficiency our approach.

### APPLICABILITY

The Managing Director of Woodside is accountable to the Board of Directors for ensuring this Policy is effectively implemented.

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

*Reviewed by the Woodside Energy Group Ltd Board in December 2022.*

## APPENDIX B RELEVANT REQUIREMENTS

The below table refers to Commonwealth Legislation related to the activity

Commonwealth Legislation	Legislation Summary
<p><i>Air Navigation Act 1920</i></p> <ul style="list-style-type: none"> <li>• Air Navigation Regulations 1947</li> <li>• Air Navigation (Aerodrome Flight Corridors) Regulations 1994</li> <li>• Air Navigation (Aircraft Engine Emissions) Regulations 1995</li> <li>• Air Navigation (Aircraft Noise) Regulations 1984</li> <li>• Air Navigation (Fuel Spillage) Regulations 1999</li> </ul>	<p>This Act relates to the management of air navigation.</p>
<p><i>Australian Maritime Safety Authority Act 1990</i></p>	<p>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.</p>
<p><i>Australian Radiation Protection and Nuclear Safety Act 1998</i></p>	<p>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.</p>
<p><i>Biosecurity Act 2015</i></p> <ul style="list-style-type: none"> <li>• Quarantine Regulations 2000</li> <li>• Biosecurity Regulation 2016</li> <li>• Australian Ballast Water Management Requirements 2017</li> </ul>	<p>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.</p> <p>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.</p>
<p><i>Environment Protection and Biodiversity Conservation Act 1999</i></p> <ul style="list-style-type: none"> <li>• Environment Protection and Biodiversity Conservation Regulations 2000</li> </ul>	<p>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.</p> <p>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.</p>
<p><i>Environment Protection (Sea Dumping) Act 1981</i></p> <ul style="list-style-type: none"> <li>• Environment Protection (Sea Dumping) Regulations 1983</li> </ul>	<p>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.</p>

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Commonwealth Legislation	Legislation Summary
<p><i>Industrial Chemicals (Notification and Assessment Act) 1989</i></p> <ul style="list-style-type: none"> <li>Industrial Chemicals (Notification and Assessment) Regulations 1990</li> </ul>	<p>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.</p>
<p><i>National Environment Protection Measures (Implementation) Act 1998</i></p> <ul style="list-style-type: none"> <li>National Environment Protection Measures (Implementation) Regulations 1999</li> </ul>	<p>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.</p> <p>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.</p>
<p><i>National Greenhouse and Energy Reporting Act 2007</i></p> <ul style="list-style-type: none"> <li>National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015</li> </ul>	<p>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.</p>
<p><i>Navigation Act 2012</i></p> <ul style="list-style-type: none"> <li>Marine order 12 – Construction – subdivision and stability, machinery and electrical installations</li> <li>Marine order 30 - Prevention of collisions</li> <li>Marine order 47 – Offshore Industry units</li> <li>Marine order 57 - Helicopter operations</li> <li>Marine order 91 - Marine pollution prevention—oil</li> <li>Marine order 93 - Marine pollution prevention—noxious liquid substances</li> <li>Marine order 94 - Marine pollution prevention—packaged harmful substances</li> <li>Marine order 96 - Marine pollution prevention—sewage</li> <li>Marine order 97 - Marine pollution prevention—air pollution</li> </ul>	<p>This Act regulates navigation and shipping including Safety of Life at Sea (SOLAS). The Act will apply to some activities of the MODU and project vessels.</p> <p>This Act is the primary legislation that regulates ship and seafarer safety, shipboard aspects of marine environment protection and pollution prevention.</p>
<p><i>Offshore Petroleum and Greenhouse Gas Storage Act 2006</i></p> <ul style="list-style-type: none"> <li>Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009</li> <li>Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011</li> <li>Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009</li> </ul>	<p>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.</p>
<p><i>Ozone Protection and Synthetic Greenhouse Gas Management Act 1989</i></p> <ul style="list-style-type: none"> <li>Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995</li> </ul>	<p>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.</p>

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Commonwealth Legislation	Legislation Summary
<p><i>Protection of the Sea (Powers of Intervention) Act 1981</i></p>	<p>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.</p>
<p><i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i>  <i>Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994</i></p> <ul style="list-style-type: none"> <li>• Marine order 91 - Marine pollution prevention—oil</li> <li>• Marine order 93 - Marine pollution prevention—noxious liquid substances</li> <li>• Marine order 94 - Marine pollution prevention—packaged harmful substances</li> <li>• Marine order 95 - Marine pollution prevention—garbage</li> <li>• Marine order 96 - Marine pollution prevention—sewage</li> </ul> <p><i>Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007</i>                      MARPOL Convention</p>	<p>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.</p> <p>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.</p> <p>All the Marine Orders listed, except for Marine Order 95, are enacted under both the <i>Navigation Act 2012</i> and the <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i>.</p> <p>This Act is an amendment to the <i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i>. This amended Act provides the protection of the sea from pollution by oil and other harmful substances discharged from ships.</p>
<p><i>Protection of the Sea (Harmful Antifouling Systems) Act 2006</i></p> <ul style="list-style-type: none"> <li>• Marine order 98—(Marine pollution—anti-fouling systems)</li> </ul>	<p>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.</p>
<p><i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i></p>	<p>The Act seeks “to preserve and protect places, areas and objects of particular significance” to Aboriginal people. Under the Section 9 and 10 provisions of the Act, the Minister for the Environment may declare significant Aboriginal areas temporarily or permanently protected if they are considered under threat. Similar declarations regarding Aboriginal objects can be made under Section 12.</p> <p>Under Section 22 of the Act, the contravention of any of these declarations is an offence. Additionally, the discovery of any Aboriginal remains must be reported to the Minister under Section 20.</p> <p>Damage or interference with Aboriginal objects or places is not an offence under the ATSIHP Act except within Victoria under Section 21U.</p>
<p><i>Underwater Cultural Heritage Act 2018</i></p> <ul style="list-style-type: none"> <li>• Underwater Cultural Heritage Guidance for Offshore Developments</li> <li>• DRAFT Guidelines to Protect Underwater Cultural Heritage</li> </ul>	<p>The Act prescribes penalties for damage to protected underwater cultural heritage without a permit under Section 30 or in contravention of a permit under Section 28. Protected underwater cultural heritage is prescribed in Section 16 to automatically include the remains and associated artefacts of any vessel or aircraft that has been in Australian waters for 75 years, whether known or unknown. This protection is also extended to underwater cultural heritage in Commonwealth waters specified by the Environment Minister under Section 17. Without a declaration under this section, Aboriginal underwater cultural heritage is not protected under the UCH Act.</p>

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## APPENDIX C EPBC ACT PROTECTED MATTERS SEARCH

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Uncontrolled when printed. Refer to electronic version for most up to date information.





# 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

Report created: 27-Mar-2023

[Summary](#)

[Details](#)

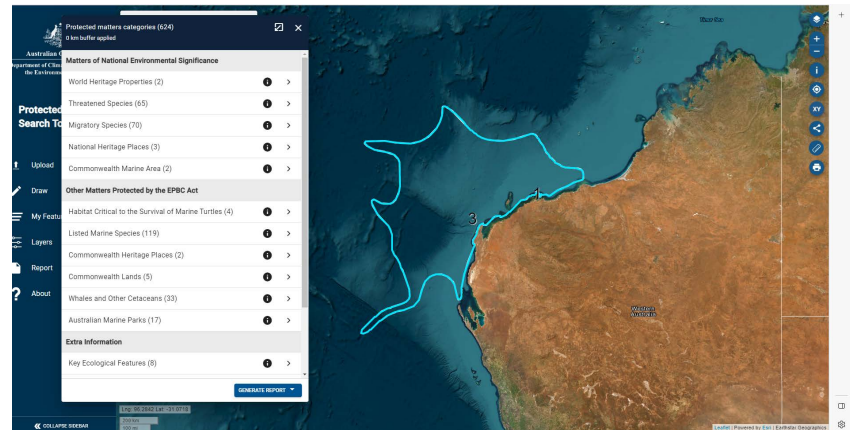
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



# Summary

## Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	2
<a href="#">National Heritage Places:</a>	3
<a href="#">Wetlands of International Importance (Ramsar)</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	2
<a href="#">Listed Threatened Ecological Communities:</a>	None
<a href="#">Listed Threatened Species:</a>	65
<a href="#">Listed Migratory Species:</a>	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 <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.

<a href="#">Commonwealth Lands:</a>	5
<a href="#">Commonwealth Heritage Places:</a>	2
<a href="#">Listed Marine Species:</a>	119
<a href="#">Whales and Other Cetaceans:</a>	33
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	17
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	4

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">State and Territory Reserves:</a>	32
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	1
<a href="#">EPBC Act Referrals:</a>	219
<a href="#">Key Ecological Features (Marine):</a>	8
<a href="#">Biologically Important Areas:</a>	42
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### World Heritage Properties [\[ Resource Information \]](#)

Name	State	Legal Status
<a href="#">Shark Bay, Western Australia</a>	WA	Declared property
<a href="#">The Ningaloo Coast</a>	WA	Declared property

### National Heritage Places [\[ Resource Information \]](#)

Name	State	Legal Status
Indigenous		
<a href="#">Dampier Archipelago (including Burrup Peninsula)</a>	WA	Listed place
Natural		
<a href="#">Shark Bay, Western Australia</a>	WA	Listed place
<a href="#">The Ningaloo Coast</a>	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		
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Malurus leucopterus edouardi</a> White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Papasula abbotti</a> Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
<a href="#">Pezoporus occidentalis</a> Night Parrot [59350]	Endangered	Species or species habitat may occur within area
<a href="#">Phaethon lepturus fulvus</a> Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area

## CRUSTACEAN

Scientific Name	Threatened Category	Presence Text
<a href="#">Kumonga exleyi</a> Cape Range Remipede [86875]	Vulnerable	Species or species habitat likely to occur within area
<b>FISH</b>		
<a href="#">Milyeringa veritas</a> Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Ophisternon candidum</a> Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Thunnus maccoyii</a> Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
<b>MAMMAL</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Bettongia lesueur Barrow and Boodie Islands subspecies</a> Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Bettongia lesueur lesueur</a> Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Dasyurus hallucatus</a> Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Isoodon auratus barrowensis</a> Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lagorchestes conspicillatus conspicillatus</a> Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lagorchestes hirsutus bernieri</a> Rufous Hare-wallaby (Bernier Island) [66662]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lagorchestes hirsutus Central Australian subspecies</a> Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
<a href="#">Lagorchestes hirsutus dorraeae</a> Rufous Hare-wallaby (Dorre Island) [66663]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lagostrophus fasciatus fasciatus</a> Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Macroderma gigas</a> Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Osphranter robustus isabellinus</a> Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Perameles bougainville listed as Perameles bougainville bougainville</a> Shark Bay Bandicoot [278]	Endangered	Species or species habitat known to occur within area
<a href="#">Petrogale lateralis lateralis</a> Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Pseudomys fieldi</a> Shark Bay Mouse, Djoongari, Alice Springs Mouse [113]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Rhinonicteris aurantia (Pilbara form)</a> Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
<b>REPTILE</b>		
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Ctenotus zasticus</a> Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Egernia stokesii badia</a> Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
<a href="#">Liasis olivaceus barroni</a> Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area



Scientific Name	Threatened Category	Presence Text
<b>SHARK</b>		
<a href="#">Carcharias taurus (west coast population)</a>		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Carcharodon carcharias</a>		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Centrophorus uyato listed as Centrophorus zeehaani</a>		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat may occur within area
<a href="#">Pristis clavata</a>		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis pristis</a>		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pristis zijsron</a>		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a>		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Sphyrna lewini</a>		
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
<b>Migratory Marine Birds</b>		
<a href="#">Anous stolidus</a>		
Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Apus pacificus</a>		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Ardena carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Ardena pacifica</a> Wedge-tailed Shearwater [84292]		Breeding known to occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat likely to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
<a href="#">Hydroprogne caspia</a> Caspian Tern [808]		Breeding known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Onychoprion anaethetus</a> Bridled Tern [82845]		Breeding known to occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Sternula albifrons</a> Little Tern [82849]		Species or species habitat may occur within area
<a href="#">Sula dactylatra</a> Masked Booby [1021]		Breeding known to occur within area
<a href="#">Sula leucogaster</a> Brown Booby [1022]		Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
<b>Migratory Marine Species</b>		
<a href="#">Anoxypristis cuspidata</a> Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area
<a href="#">Balaenoptera bonaerensis</a> Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Dugong dugon</a> Dugong [28]		Breeding known to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Eubalaena australis</a> as <a href="#">Balaena glacialis australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Isurus oxyrinchus</a> Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
<a href="#">Isurus paucus</a> Longfin Mako [82947]		Species or species habitat likely to occur within area
<a href="#">Lamna nasus</a> Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Breeding known to occur within area
<a href="#">Mobula alfredi</a> as <a href="#">Manta alfredi</a> Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
<a href="#">Mobula birostris</a> as <a href="#">Manta birostris</a> Giant Manta Ray [90034]		Species or species habitat known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
<a href="#">Orcaella heinsohni</a> Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Sousa sahalensis as Sousa chinensis</a> Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Hirundo rustica</a> Barn Swallow [662]		Species or species habitat may occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
<a href="#">Glareola maldivarum</a> Oriental Pratincole [840]		Species or species habitat may occur within area
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]		Species or species habitat known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area
<a href="#">Thalasseus bergii</a> Greater Crested Tern [83000]		Breeding known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area



## Other Matters Protected by the EPBC Act

### Commonwealth Lands

[\[ Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

#### Commonwealth Land Name

State

#### Defence

Defence - EXMOUTH VLF TRANSMITTER STATION [50122]

WA

Defence - EXMOUTH VLF TRANSMITTER STATION [50123]

WA

Defence - LEARMONTH - AIR WEAPONS RANGE [50193]

WA

Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]

WA

#### Unknown

Commonwealth Land - [52236]

WA

### Commonwealth Heritage Places

[\[ Resource Information \]](#)

#### Name

State

Status

#### Natural

[Learmonth Air Weapons Range Facility](#)

WA

Listed place

[Ningaloo Marine Area - Commonwealth Waters](#)

WA

Listed place

### Listed Marine Species

[\[ Resource Information \]](#)

#### Scientific Name

Threatened Category

Presence Text

#### Bird

[Actitis hypoleucos](#)

Common Sandpiper [59309]

Species or species habitat known to occur within area

[Anous stolidus](#)

Common Noddy [825]

Species or species habitat likely to occur within area

[Anous tenuirostris melanops](#)

Australian Lesser Noddy [26000]

Vulnerable

Species or species habitat may occur within area

[Apus pacificus](#)

Fork-tailed Swift [678]

Species or species habitat likely to occur within area overfly marine area



Scientific Name	Threatened Category	Presence Text
<a href="#">Ardenna carneipes as Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Ardenna pacifica as Puffinus pacificus</a> Wedge-tailed Shearwater [84292]		Breeding known to occur within area
<a href="#">Bubulcus ibis as Ardea ibis</a> Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat likely to occur within area
<a href="#">Chalcites osculans as Chrysococcyx osculans</a> Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
<a href="#">Chroicocephalus novaehollandiae as Larus novaehollandiae</a> Silver Gull [82326]		Breeding known to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Breeding known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
<a href="#">Glareola maldivarum</a> Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<a href="#">Hirundo rustica</a> Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
<a href="#">Hydroprogne caspia as Sterna caspia</a> Caspian Tern [808]		Breeding known to occur within area
<a href="#">Larus pacificus</a> Pacific Gull [811]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]		Species or species habitat known to occur within area overfly marine area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Onychoprion anaethetus as Sterna anaethetus</a> Bridled Tern [82845]		Breeding known to occur within area
<a href="#">Onychoprion fuscatus as Sterna fuscata</a> Sooty Tern [90682]		Breeding known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Papasula abbotti</a> Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
<a href="#">Phaethon lepturus fulvus</a> Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Rostratula australis as Rostratula benghalensis (sensu lato)</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
<a href="#">Stercorarius skua as Catharacta skua</a> Great Skua [823]		Species or species habitat may occur within area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Sternula albifrons as Sterna albifrons</a> Little Tern [82849]		Species or species habitat may occur within area
<a href="#">Sternula nereis as Sterna nereis</a> Fairy Tern [82949]		Breeding known to occur within area
<a href="#">Sula dactylatra</a> Masked Booby [1021]		Breeding known to occur within area
<a href="#">Sula leucogaster</a> Brown Booby [1022]		Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalasseus bengalensis as Sterna bengalensis</a> Lesser Crested Tern [66546]		Breeding known to occur within area
<a href="#">Thalasseus bergii as Sterna bergii</a> Greater Crested Tern [83000]		Breeding known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area
<b>Fish</b>		
<a href="#">Acentronura larsonae</a> Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
<a href="#">Bulbonaricus brauni</a> Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
<a href="#">Campichthys galei</a> Gale's Pipefish [66191]		Species or species habitat may occur within area
<a href="#">Campichthys tricarinatus</a> Three-keel Pipefish [66192]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Choeroichthys brachysoma</a> Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
<a href="#">Choeroichthys latispinosus</a> Muiron Island Pipefish [66196]		Species or species habitat may occur within area
<a href="#">Choeroichthys suillus</a> Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
<a href="#">Corythoichthys flavofasciatus</a> Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
<a href="#">Cosmocampus banneri</a> Roughridge Pipefish [66206]		Species or species habitat may occur within area
<a href="#">Doryrhamphus dactyliophorus</a> Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
<a href="#">Doryrhamphus excisus</a> Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
<a href="#">Doryrhamphus janssi</a> Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
<a href="#">Doryrhamphus multiannulatus</a> Many-banded Pipefish [66717]		Species or species habitat may occur within area
<a href="#">Doryrhamphus negrosensis</a> Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
<a href="#">Festucalex scalaris</a> Ladder Pipefish [66216]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area
<a href="#">Halicampus brocki</a> Brock's Pipefish [66219]		Species or species habitat may occur within area
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
<a href="#">Halicampus nitidus</a> Glittering Pipefish [66224]		Species or species habitat may occur within area
<a href="#">Halicampus spinostris</a> Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
<a href="#">Haliichthys taeniophorus</a> Ribbioned Pipehorse, Ribbioned Seadragon [66226]		Species or species habitat may occur within area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
<a href="#">Hippocampus histrix</a> Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Hippocampus spinosissimus</a> Hedgehog Seahorse [66239]		Species or species habitat may occur within area
<a href="#">Hippocampus trimaculatus</a> Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
<a href="#">Lissocampus fatiloquus</a> Prophet's Pipefish [66250]		Species or species habitat may occur within area
<a href="#">Micrognathus micronotopterus</a> Tidepool Pipefish [66255]		Species or species habitat may occur within area
<a href="#">Nannocampus subosseus</a> Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
<a href="#">Phoxocampus belcheri</a> Black Rock Pipefish [66719]		Species or species habitat may occur within area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
<a href="#">Stigmatopora argus</a> Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus longirostris</a> Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
<b>Mammal</b>		
<a href="#">Dugong dugon</a> Dugong [28]		Breeding known to occur within area
<b>Reptile</b>		
<a href="#">Acalyptophis peronii</a> Horned Seasnake [1114]		Species or species habitat may occur within area
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Aipysurus duboisii</a> Dubois' Seasnake [1116]		Species or species habitat may occur within area
<a href="#">Aipysurus eydouxii</a> Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Aipysurus laevis</a> Olive Seasnake [1120]		Species or species habitat may occur within area
<a href="#">Aipysurus pooleorum</a> Shark Bay Seasnake [66061]		Species or species habitat may occur within area
<a href="#">Aipysurus tenuis</a> Brown-lined Seasnake [1121]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Astrotia stokesii</a> Stokes' Seasnake [1122]		Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Chitulia ornata as Hydrophis ornatus</a> Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area
<a href="#">Disteira major</a> Olive-headed Seasnake [1124]		Species or species habitat may occur within area
<a href="#">Emydocephalus annulatus</a> Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
<a href="#">Ephalophis greyi</a> North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
<a href="#">Hydrelaps darwiniensis</a> Black-ringed Seasnake [1100]		Species or species habitat may occur within area
<a href="#">Hydrophis elegans</a> Elegant Seasnake [1104]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Hydrophis macdowelli</a> as <a href="#">Hydrophis mcdowelli</a> Small-headed Seasnake [75601]		Species or species habitat may occur within area
<a href="#">Leioselasma czeblukovi</a> as <a href="#">Hydrophis czeblukovi</a> Fine-spined Seasnake, Geometrical Seasnake [87374]		Species or species habitat may occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
<a href="#">Pelamis platurus</a> 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		
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area
<a href="#">Balaenoptera bonaerensis</a> Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Current Scientific Name	Status	Type of Presence
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Feresa attenuata</a> Pygmy Killer Whale [61]		Species or species habitat may occur within area
<a href="#">Globicephala macrorhynchus</a> Short-finned Pilot Whale [62]		Species or species habitat may occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
<a href="#">Indopacetus pacificus</a> Longman's Beaked Whale [72]		Species or species habitat may occur within area
<a href="#">Kogia breviceps</a> Pygmy Sperm Whale [57]		Species or species habitat may occur within area
<a href="#">Kogia sima as Kogia simus</a> Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
<a href="#">Lagenodelphis hosei</a> Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Breeding known to occur within area
<a href="#">Mesoplodon densirostris</a> Blainville's Beaked Whale, Dense- beaked Whale [74]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
<a href="#">Mesoplodon ginkgodens</a> Ginkgo-toothed Beaked Whale, Ginkgo-toothed Whale, Ginkgo Beaked Whale [59564]		Species or species habitat may occur within area
<a href="#">Mesoplodon grayi</a> Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
<a href="#">Orcaella heinsohni as Orcaella brevirostris</a> Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Peponocephala electra</a> Melon-headed Whale [47]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pseudorca crassidens</a> False Killer Whale [48]		Species or species habitat likely to occur within area
<a href="#">Sousa sahalensis as Sousa chinensis</a> Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Stenella coeruleoalba</a> Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
<a href="#">Stenella longirostris</a> Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
<a href="#">Steno bredanensis</a> Rough-toothed Dolphin [30]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area
<a href="#">Ziphius cavirostris</a> Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[ Resource Information ]
Park Name	Zone & IUCN Categories
Abrolhos	Habitat Protection Zone (IUCN IV)
Carnarvon Canyon	Habitat Protection Zone (IUCN IV)
Dampier	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Dampier	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)

Park Name	Zone & IUCN Categories
Shark Bay	Multiple Use Zone (IUCN VI)
Dampier	National Park Zone (IUCN II)
Gascoyne	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)

### Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Aug - Sep		
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Nesting	Known to occur
Nov-Feb		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Nesting	Known to occur
Nov - May		
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Nesting	Known to occur

### Extra Information

State and Territory Reserves		<a href="#">[ Resource Information ]</a>
Protected Area Name	Reserve Type	State
Airlie Island	Nature Reserve	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Park	WA
Barrow Island	Marine Management Area	WA
Bedout Island	Nature Reserve	WA
Bernier And Dorre Islands	Nature Reserve	WA



Protected Area Name	Reserve Type	State
Boodie, Double Middle Islands	Nature Reserve	WA
Bundegi Coastal Park	5(1)(h) Reserve	WA
Cape Range	National Park	WA
Great Sandy Island	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Montebello Islands	Conservation Park	WA
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Ningaloo	Marine Park	WA
North Sandy Island	Nature Reserve	WA
Serrurier Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA36909	5(1)(h) Reserve	WA
Unnamed WA36910	5(1)(h) Reserve	WA
Unnamed WA36913	Nature Reserve	WA
Unnamed WA36915	Nature Reserve	WA
Unnamed WA37338	5(1)(h) Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40828	5(1)(h) Reserve	WA
Unnamed WA40877	5(1)(h) Reserve	WA
Unnamed WA41080	5(1)(h) Reserve	WA
Unnamed WA44667	5(1)(h) Reserve	WA
Unnamed WA44672	5(1)(h) Reserve	WA



Nationally Important Wetlands			[ <a href="#">Resource Information</a> ]
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Wetland Name		State
<a href="#">Cape Range Subterranean Waterways</a>		WA

EPBC Act Referrals				[ <a href="#">Resource Information</a> ]
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Title of referral	Reference	Referral Outcome	Assessment Status
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<a href="#">Browse to North West Shelf Development, Indian Ocean, WA</a>	2018/8319		Approval
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<a href="#">North West Shelf Project Extension, Carnarvon Basin, WA</a>	2018/8335		Approval
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<a href="#">Project Highclere Cable Lay and Operation</a>	2022/09203		Completed
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Action clearly unacceptable			
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<a href="#">Highlands 3D Marine Seismic Survey</a>	2012/6680	Action Clearly Unacceptable	Completed
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Controlled action			
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<a href="#">'Van Gogh' Petroleum Field Development</a>	2007/3213	Controlled Action	Post-Approval
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<a href="#">Anketell Point Iron Ore Processing &amp; Export Port</a>	2009/5120	Controlled Action	Post-Approval
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<a href="#">Construct and operate LNG &amp; domestic gas plant including onshore and offshore facilities - Wheatston</a>	2008/4469	Controlled Action	Post-Approval
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<a href="#">Develop Jansz-lo deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-</a>	2005/2184	Controlled Action	Post-Approval
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<a href="#">Development of Angel gas and condensate field, North West Shelf</a>	2004/1805	Controlled Action	Post-Approval
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<a href="#">Development of Browse Basin Gas Fields (Upstream)</a>	2008/4111	Controlled Action	Completed
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<a href="#">Development of Coniston/Novara fields within the Exmouth Sub-basin</a>	2011/5995	Controlled Action	Post-Approval
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<a href="#">Development of Stybarrow petroleum field incl drilling and facility installation</a>	2004/1469	Controlled Action	Post-Approval
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<a href="#">Echo-Yodel Production Wells</a>	2000/11	Controlled Action	Post-Approval
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<a href="#">Enfield full field development</a>	2001/257	Controlled Action	Post-Approval
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Title of referral	Reference	Referral Outcome	Assessment Status
<b>Controlled action</b>			
<a href="#">Equus Gas Fields Development Project, Carnarvon Basin</a>	2012/6301	Controlled Action	Completed
<a href="#">Eramurra Industrial Salt Project</a>	2021/9027	Controlled Action	Assessment Approach
<a href="#">Gorgon Gas Development</a>	2003/1294	Controlled Action	Post-Approval
<a href="#">Gorgon Gas Development 4th Train Proposal</a>	2011/5942	Controlled Action	Post-Approval
<a href="#">Gorgon Gas Revised Development</a>	2008/4178	Controlled Action	Post-Approval
<a href="#">Greater Enfield (Vincent) Development</a>	2005/2110	Controlled Action	Post-Approval
<a href="#">Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island</a>	2005/2141	Controlled Action	Completed
<a href="#">Light Crude Oil Production</a>	2001/365	Controlled Action	Post-Approval
<a href="#">Mardie Project, 80 km south west of Karratha, WA</a>	2018/8236	Controlled Action	Post-Approval
<a href="#">Nava-1 Cable System</a>	2001/510	Controlled Action	Completed
<a href="#">Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia</a>	2020/8693	Controlled Action	Assessment Approach
<a href="#">Pluto Gas Project</a>	2005/2258	Controlled Action	Completed
<a href="#">Pluto Gas Project Including Site B</a>	2006/2968	Controlled Action	Post-Approval
<a href="#">Port Hedland Outer Harbour Development and associated marine and terrestrial in</a>	2008/4159	Controlled Action	Post-Approval
<a href="#">Pyrenees Oil Fields Development</a>	2005/2034	Controlled Action	Post-Approval
<a href="#">Simpson Development</a>	2000/59	Controlled Action	Completed
<a href="#">Simpson Oil Field Development</a>	2001/227	Controlled Action	Post-Approval
<a href="#">The Scarborough Project - FLNG &amp; assoc subsea infrastructure, Carnarvon Basin</a>	2013/6811	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Controlled action</b>			
<a href="#">Vincent Appraisal Well</a>	2000/22	Controlled Action	Post-Approval
<a href="#">Yardie Creek Road Realignment Project</a>	2021/8967	Controlled Action	Assessment Approach
<b>Not controlled action</b>			
<a href="#">'Goodwyn A' Low Pressure Train Project</a>	2003/914	Not Controlled Action	Completed
<a href="#">'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)</a>	2006/3148	Not Controlled Action	Completed
<a href="#">Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast</a>	2014/7250	Not Controlled Action	Completed
<a href="#">APX-West Fibre-optic telecommunications cable system, WA to Singapore</a>	2013/7102	Not Controlled Action	Completed
<a href="#">Baniyas-1 Exploration Well, EP-424, near Onslow</a>	2007/3282	Not Controlled Action	Completed
<a href="#">Barrow Island 2D Seismic survey</a>	2006/2667	Not Controlled Action	Completed
<a href="#">Bollinger 2D Seismic Survey 200km North of North West Cape WA</a>	2004/1868	Not Controlled Action	Completed
<a href="#">Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells</a>	2000/103	Not Controlled Action	Completed
<a href="#">Carnarvon 3D Marine Seismic Survey</a>	2004/1890	Not Controlled Action	Completed
<a href="#">Cazadores 2D seismic survey</a>	2004/1720	Not Controlled Action	Completed
<a href="#">Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for</a>	2004/1703	Not Controlled Action	Completed
<a href="#">Controlled Source Electromagnetic Survey</a>	2007/3262	Not Controlled Action	Completed
<a href="#">Development of Halyard Field off the west coast of WA</a>	2010/5611	Not Controlled Action	Completed
<a href="#">Development of iron ore facilities</a>	2013/7013	Not Controlled Action	Completed
<a href="#">Development of Mutineer and Exeter petroleum fields for oil production, Permit</a>	2003/1033	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action</b>			
<a href="#">Drilling of an exploration well Gats-1 in Permit Area WA-261-P</a>	2004/1701	Not Controlled Action	Completed
<a href="#">Eagle-1 Exploration Drilling, North West Shelf, WA</a>	2019/8578	Not Controlled Action	Completed
<a href="#">Echo A Development WA-23-L, WA-24-L</a>	2005/2042	Not Controlled Action	Completed
<a href="#">Exploration drilling well WA-155-P(1)</a>	2003/971	Not Controlled Action	Completed
<a href="#">Exploration of appraisal wells</a>	2006/3065	Not Controlled Action	Completed
<a href="#">Exploration Well (Taunton-2)</a>	2002/731	Not Controlled Action	Completed
<a href="#">Exploration Well in Permit Area WA-155-P(1)</a>	2002/759	Not Controlled Action	Completed
<a href="#">Exploratory drilling in permit area WA-225-P</a>	2001/490	Not Controlled Action	Completed
<a href="#">Extension of Simpson Oil Platforms &amp; Wells</a>	2002/685	Not Controlled Action	Completed
<a href="#">HCA05X Macedon Experimental Survey</a>	2004/1926	Not Controlled Action	Completed
<a href="#">Hess Exploration Drilling Programme</a>	2007/3566	Not Controlled Action	Completed
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a>	2015/7522	Not Controlled Action	Completed
<a href="#">INDIGO West Submarine Telecommunications Cable, WA</a>	2017/8126	Not Controlled Action	Completed
<a href="#">Infill Production Well (Griffin-9)</a>	2001/417	Not Controlled Action	Completed
<a href="#">Jansz-2 and 3 Appraisal Wells</a>	2002/754	Not Controlled Action	Completed
<a href="#">Klammer 2D Seismic Survey</a>	2002/868	Not Controlled Action	Completed
<a href="#">Maia-Gaea Exploration wells</a>	2000/17	Not Controlled Action	Completed
<a href="#">Manaslu - 1 and Huascarán - 1 Offshore Exploration Wells</a>	2001/235	Not Controlled Action	Completed
<a href="#">Mermaid Marine Australia Desalination Project</a>	2011/5916	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action</b>			
<a href="#">Montesa-1 and Bultaco-1 Exploration Wells</a>	2000/102	Not Controlled Action	Completed
<a href="#">Murujuga archaeological excavation, collection and sampling, Dampier Archipelago, WA</a>	2014/7160	Not Controlled Action	Completed
<a href="#">North Rankin B gas compression facility</a>	2005/2500	Not Controlled Action	Completed
<a href="#">Pipeline System Modifications Project</a>	2000/3	Not Controlled Action	Completed
<a href="#">Port Hedland Channel Risk and Optimisation Project, WA</a>	2017/7915	Not Controlled Action	Completed
<a href="#">Project Highclere Geophysical Survey</a>	2021/9023	Not Controlled Action	Completed
<a href="#">Searipple gas and condensate field development</a>	2000/89	Not Controlled Action	Completed
<a href="#">Spool Base Facility</a>	2001/263	Not Controlled Action	Completed
<a href="#">Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline</a>	2005/2033	Not Controlled Action	Completed
<a href="#">sub-sea tieback of Perseus field wells</a>	2004/1326	Not Controlled Action	Completed
<a href="#">Telstra North Rankin Spur Fibre Optic Cable</a>	2016/7836	Not Controlled Action	Completed
<a href="#">Thevenard Island Retirement Project</a>	2015/7423	Not Controlled Action	Completed
<a href="#">To construct and operate an offshore submarine fibre optic cable, WA</a>	2014/7373	Not Controlled Action	Completed
<a href="#">WA-295-P Kerr-McGee Exploration Wells</a>	2001/152	Not Controlled Action	Completed
<a href="#">Wanda Offshore Research Project, 80 km north-east of Exmouth, WA</a>	2018/8293	Not Controlled Action	Completed
<a href="#">Western Flank Gas Development</a>	2005/2464	Not Controlled Action	Completed
<a href="#">Wheatstone 3D seismic survey, 70km north of Barrow Island</a>	2004/1761	Not Controlled Action	Completed

**Not controlled action (particular manner)**



Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km</a>	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32</a>	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">"Leanne" offshore 3D seismic exploration, WA-356-P</a>	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D and 3D seismic surveys</a>	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D marine seismic survey</a>	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D seismic survey</a>	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D Seismic Survey</a>	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D Seismic Survey Permit Area WA-352-P</a>	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D seismic survey within permit WA-291</a>	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D marine seismic survey</a>	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Marine Seismic Survey (WA-482-P, WA-363-P), WA</a>	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P</a>	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<a href="#"><u>Not controlled action (particular manner) and WA-268-P</u></a>		Manner)	
<a href="#"><u>3D Marine Seismic Survey in WA 457-P &amp; WA 458-P, North West Shelf, offshore WA</u></a>	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>3D marine seismic survey over petroleum title WA-268-P</u></a>	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>3D Marine Seismic Surveys - Contos CT-13 &amp; Supertubes CT-13, offshore WA</u></a>	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>3D seismic survey</u></a>	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>3D Seismic Survey, WA</u></a>	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>3D Seismic Survey in the Carnarvon Basin on the North West Shelf</u></a>	2002/778	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>3D seismic survey</u></a>	2006/2781	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>Acheron Non-Exclusive 2D Seismic Survey</u></a>	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>Acheron Non-Exclusive 2D Seismic Survey</u></a>	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>Agrippina 3D Seismic Marine Survey</u></a>	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#"><u>Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program</u></a>	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Aperio 3D Marine Seismic Survey, WA</a>	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Artemis-1 Drilling Program (WA-360-P)</a>	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Australia to Singapore Fibre Optic Submarine Cable System</a>	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA</a>	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Balnaves Condensate Field Development</a>	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Bonaventure 3D seismic survey</a>	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Cable Seismic Exploration Permit areas WA-323-P and WA-330-P</a>	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Cerberus exploration drilling campaign, Carnarvon Basin, WA</a>	2016/7645	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">CGGVERITAS 2010 2D Seismic Survey</a>	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Charon 3D Marine Seismic Survey</a>	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Consturction &amp; operation of the Varanus Island kitchen &amp; mess cyclone refuge building, compression p</a>	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Coverack Marine Seismic Survey</a>	2001/399	Not Controlled Action (Particular	Post-Approval



Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		Manner)	
<a href="#">Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P</a>	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">CVG 3D Marine Seismic Survey</a>	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">DAVROS MC 3D marine seismic survey northwaet of Dampier, WA</a>	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Decommissioning of the Legendre facilities</a>	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Deep Water Drilling Program</a>	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Deep Water Northwest Shelf 2D Seismic Survey</a>	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Demeter 3D Seismic Survey, off Dampier, WA</a>	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Diesel Fuel Bunker Operation</a>	2012/6289	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Draeck 3D Marine Seismic Survey, WA-205-P</a>	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Drilling 35-40 offshore exploration wells in deep water</a>	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Earthworks for kitchen/mess, cyclone refuge building &amp; Compression Plant, Varanus Island</a>	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Eendracht Multi-Client 3D Marine Seismic Survey</a>	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Effect of marine seismic sounds to demersal fish and pearl oysters, north-west WA</a>	2018/8169	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Enfield M3 &amp; Vincent 4D Marine Seismic Surveys</a>	2008/3981	Not Controlled Action (Particular Manner)	Completed
<a href="#">Enfield M3 4D, Vincent 4D &amp; 4D Line Test Marine Seismic Surveys</a>	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Enfield M4 4D Marine Seismic Survey</a>	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Enfield oilfield 3D Seismic Survey</a>	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Exmouth West 2D Marine Seismic Survey</a>	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Exploration drilling of Zeus-1 well</a>	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Fletcher-Finucane Development, WA26-L and WA191-P</a>	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Foxhound 3D Non-Exclusive Marine Seismic Survey</a>	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L</a>	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Geco Eagle 3D Marine Seismic Survey</a>	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		Manner)	
<a href="#">Glencoe 3D Marine Seismic Survey WA-390-P</a>	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Greater Western Flank Phase 1 gas Development</a>	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Grimalkin 3D Seismic Survey</a>	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Guacamole 2D Marine Seismic Survey</a>	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Harmony 3D Marine Seismic Survey</a>	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Harpy 1 exploration well</a>	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Honeycombs MC3D Marine Seismic Survey</a>	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA</a>	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA</a>	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">INDIGO Marine Cable Route Survey (INDIGO)</a>	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">John Ross &amp; Rosella Off Bottom Cable Seismic Exploration Program</a>	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Judo Marine 3D Seismic Survey within and adjacent to WA-412-P</a>	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Judo Marine 3D Seismic Survey within and adjacent to WA-412-P</a>	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Julimar Brunello Gas Development Project</a>	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Klimt 2D Marine Seismic Survey</a>	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey</a>	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta</a>	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Leopard 2D marine seismic survey</a>	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Lion 2D Marine Seismic Survey</a>	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Macedon Gas Field Development</a>	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Marine Geotechnical Drilling Program</a>	2008/4012	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Marine reconnaissance survey</a>	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Moosehead 2D seismic survey within permit WA-192-P</a>	2005/2167	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		Manner)	
<a href="#">Munmorah 2D seismic survey within permits WA-308/9-P</a>	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Ocean Bottom Cable Seismic Program, WA-264-P</a>	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Ocean Bottom Cable Seismic Survey</a>	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Offshore Canning Multi Client 2D Marine Seismic Survey</a>	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Offshore Drilling Campaign</a>	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Offshore Fibre Optic Cable Network Construction &amp; Operation, Port Hedland WA to Darwin NT</a>	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Orcus 3D Marine Seismic Survey in WA-450-P</a>	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Osprey and Dionysus Marine Seismic Survey</a>	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Palta-1 exploration well in Petroleum Permit Area WA-384-P</a>	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P</a>	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Port Headland Outer Harbour Pre-construction Pilling program</a>	2012/6341	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Port of Port Hedland channel marker replacement project, WA</a>	2017/8010	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Port Walcott upgrade, dredging &amp; spoil disposal, &amp; channel realignment</a>	2006/2806	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Pyrenees 4D Marine Seismic Monitor Survey, HCA12A</a>	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Pyrenees-Macedon 3D marine seismic survey</a>	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon</a>	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Reindeer gas reservoir development, Devil Creek, Carnarvon Basin - WA</a>	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Rose 3D Seismic Program</a>	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Rydal-1 Petroleum Exploration Well, WA</a>	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Salsa 3D Marine Seismic Survey</a>	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Santos Winchester three dimensional seismic survey - WA-323-P &amp; WA-330-P</a>	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Scarborough Development nearshore component, NWS, WA</a>	2018/8362	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Skorpion Marine Seismic Survey WA</a>	2001/416	Not Controlled Action (Particular	Post-Approval



Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		Manner)	
<a href="#">Sovereign 3D Marine Seismic Survey</a>	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Stag 4D &amp; Reindeer MAZ Marine Seismic Surveys, WA</a>	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Stag Off-bottom Cable Seismic Survey</a>	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Stybarrow 4D Marine Seismic Survey</a>	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Stybarrow Baseline 4D marine seismic survey</a>	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Tantabiddi Boat Ramp Sand Bypassing</a>	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Tidepole Maz 3D Seismic Survey Campaign</a>	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Tortilla 2D Seismic Survey, WA</a>	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R</a>	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Undertake a 3D marine seismic survey</a>	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Undertake a three dimensional marine seismic survey</a>	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Undertake a three dimensional marine seismic survey</a>	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Vincent M1 and Enfield M5 4D Marine Seismic Survey</a>	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Warramunga Non-Inclusive 3D Seismic Survey</a>	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">West Anchor 3D Marine Seismic Survey</a>	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">West Panaeus 3D seismic survey</a>	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Westralia SPAN Marine Seismic Survey, WA &amp; NT</a>	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Wheatstone 3D MAZ Marine Seismic Survey</a>	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Wheatstone Iago Appraisal Well Drilling</a>	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Wheatstone Iago Appraisal Well Drilling</a>	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
<b>Referral decision</b>			
<a href="#">3D Marine Seismic Survey in the offshore northwest Carnarvon Basin</a>	2011/6175	Referral Decision	Completed
<a href="#">3D Seismic Survey</a>	2008/4219	Referral Decision	Completed
<a href="#">Bianchi 3D Marine Seismic Survey, Carnarvon Basin, WA</a>	2013/7078	Referral Decision	Completed
<a href="#">CVG 3D Marine Seismic Survey</a>	2012/6270	Referral Decision	Completed



Title of referral	Reference	Referral Outcome	Assessment Status
<b>Referral decision</b>			
<a href="#">Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L</a>	2005/2370	Referral Decision	Completed
<a href="#">Outer Harbour Development and associated marine and terrestrial infrastructure</a>	2008/4148	Referral Decision	Completed
<a href="#">Rose 3D Seismic acquisition survey</a>	2008/4220	Referral Decision	Completed
<a href="#">Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-</a>	2008/4165	Referral Decision	Completed
<a href="#">Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)</a>	2010/5507	Referral Decision	Completed
<a href="#">Varanus Island Compression Project</a>	2012/6698	Referral Decision	Completed

## Key Ecological Features

[ [Resource Information](#) ]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
<a href="#">Ancient coastline at 125 m depth contour</a>	North-west
<a href="#">Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula</a>	North-west
<a href="#">Commonwealth waters adjacent to Ningaloo Reef</a>	North-west
<a href="#">Continental Slope Demersal Fish Communities</a>	North-west
<a href="#">Exmouth Plateau</a>	North-west
<a href="#">Glomar Shoals</a>	North-west
<a href="#">Wallaby Saddle</a>	North-west
<a href="#">Western demersal slope and associated fish communities</a>	South-west

## Biologically Important Areas

Scientific Name	Behaviour	Presence
<b>Dugong</b>		
<a href="#">Dugong dugon</a>		
Dugong [28]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
<a href="#">Dugong dugon</a> Dugong [28]	Calving	Known to occur
<a href="#">Dugong dugon</a> Dugong [28]	Foraging (high density seagrass beds)	Known to occur
<a href="#">Dugong dugon</a> Dugong [28]	Nursing	Known to occur
<b>Marine Turtles</b>		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Foraging	Known to occur
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Internesting buffer	Known to occur
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Nesting	Known to occur
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Aggregation	Known to occur
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Basking	Known to occur
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Foraging	Known to occur
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Internesting	Known to occur
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Internesting buffer	Known to occur
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Mating	Known to occur
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Migration corridor	Known to occur

Scientific Name	Behaviour	Presence
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Nesting	Known to occur
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Foraging	Known to occur
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Internesting	Known to occur
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Internesting buffer	Known to occur
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Mating	Known to occur
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Migration corridor	Known to occur
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Nesting	Known to occur
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Aggregation	Known to occur
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Foraging	Known to occur
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Internesting	Known to occur
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Internesting buffer	Known to occur
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Mating	Known to occur
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Migration corridor	Known to occur
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Nesting	Known to occur

## Seabirds

Scientific Name	Behaviour	Presence
<a href="#">Ardena pacifica</a> Wedge-tailed Shearwater [84292]	Breeding	Known to occur
<a href="#">Fregata ariel</a> Lesser Frigatebird [1012]	Breeding	Known to occur
<a href="#">Onychoprion fuscata</a> Sooty Tern [82847]	Foraging	Known to occur
<a href="#">Sterna dougallii</a> Roseate Tern [817]	Breeding	Known to occur
<a href="#">Sternula nereis</a> Fairy Tern [82949]	Breeding	Known to occur
<a href="#">Sula leucogaster</a> Brown Booby [1022]	Breeding	Known to occur
<a href="#">Thalasseus bengalensis</a> Lesser Crested Tern [66546]	Breeding	Known to occur
<b>Sharks</b>		
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Foraging	Known to occur
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Foraging (high density prey)	Known to occur
<b>Whales</b>		
<a href="#">Balaenoptera musculus brevipinna</a> Pygmy Blue Whale [81317]	Distribution	Known to occur
<a href="#">Balaenoptera musculus brevipinna</a> Pygmy Blue Whale [81317]	Foraging	Known to occur
<a href="#">Balaenoptera musculus brevipinna</a> Pygmy Blue Whale [81317]	Migration	Known to occur
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Migration (north and south)	Known to occur

Scientific Name	Behaviour	Presence
<a href="#">Megaptera novaeangliae</a>		
Humpback Whale [38]	Resting	Known to occur

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Operational Area

Report created: 27-Mar-2023

[Summary](#)

[Details](#)

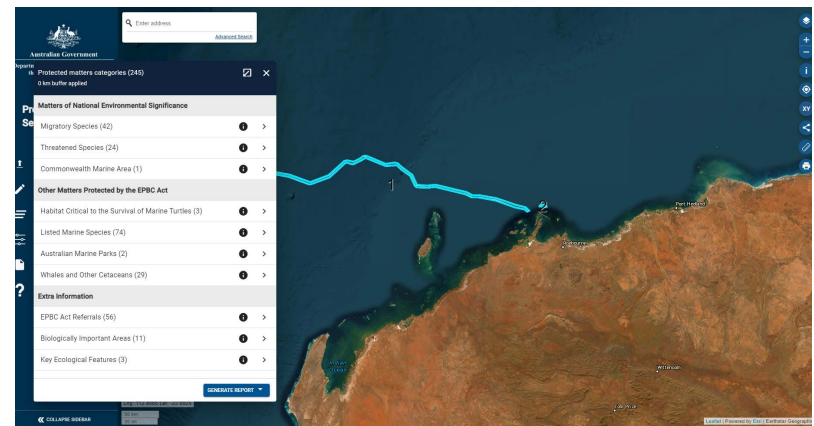
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



# Summary

## Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	1
<a href="#">Listed Threatened Ecological Communities:</a>	None
<a href="#">Listed Threatened Species:</a>	24
<a href="#">Listed Migratory Species:</a>	42

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Lands:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	74
<a href="#">Whales and Other Cetaceans:</a>	29
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	2
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	3

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">State and Territory Reserves:</a>	None
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">EPBC Act Referrals:</a>	56
<a href="#">Key Ecological Features (Marine):</a>	3
<a href="#">Biologically Important Areas:</a>	11
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	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

#### [Calidris ferruginea](#)

Curlew Sandpiper [856]

Critically Endangered

Species or species habitat may occur within area

#### [Macronectes giganteus](#)

Southern Giant-Petrel, Southern Giant Petrel [1060]

Endangered

Species or species habitat may occur within area

#### [Numenius madagascariensis](#)

Eastern Curlew, Far Eastern Curlew [847]

Critically Endangered

Species or species habitat may occur within area

#### [Phaethon lepturus fulvus](#)

Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]

Endangered

Species or species habitat may occur within area

#### [Sternula nereis nereis](#)

Australian Fairy Tern [82950]

Vulnerable

Breeding known to occur within area

#### FISH

Scientific Name	Threatened Category	Presence Text
<a href="#">Thunnus maccoyii</a> Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
<b>MAMMAL</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
<b>REPTILE</b>		
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
<b>SHARK</b>		

Scientific Name	Threatened Category	Presence Text
<a href="#">Carcharias taurus (west coast population)</a> Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Sphyrna lewini</a> 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
<b>Migratory Marine Birds</b>		
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat may occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat may occur within area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding likely to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Anoxypristis cuspidata</a> Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera bonaerensis</a> Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat known to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
<a href="#">Isurus oxyrinchus</a> Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
<a href="#">Isurus paucus</a> Longfin Mako [82947]		Species or species habitat likely to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Breeding known to occur within area
<a href="#">Mobula alfredi as Manta alfredi</a> Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Mobula birostris as Manta birostris</a> Giant Manta Ray [90034]		Species or species habitat likely to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
<a href="#">Orcaella heinsohni</a> Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Sousa sahalensis as Sousa chinensis</a> Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

## Other Matters Protected by the EPBC Act

Listed Marine Species		[ Resource Information ]
Scientific Name	Threatened Category	Presence Text
Bird		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat may occur within area
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat may occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat likely to occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat may occur within area
<a href="#">Phaethon lepturus fulvus</a> Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding likely to occur within area
<b>Fish</b>		
<a href="#">Acentronura larsonae</a> Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
<a href="#">Bulbonaricus brauni</a> Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
<a href="#">Campichthys tricarinatus</a> Three-keel Pipefish [66192]		Species or species habitat may occur within area
<a href="#">Choeroichthys brachysoma</a> Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
<a href="#">Choeroichthys latispinosus</a> Muiron Island Pipefish [66196]		Species or species habitat may occur within area
<a href="#">Choeroichthys suillus</a> Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
<a href="#">Corythoichthys flavofasciatus</a> Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
<a href="#">Cosmocampus banneri</a> Roughridge Pipefish [66206]		Species or species habitat may occur within area
<a href="#">Doryrhamphus dactyliophorus</a> Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
<a href="#">Doryrhamphus excisus</a> Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Doryrhamphus janssi</a> Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
<a href="#">Doryrhamphus multiannulatus</a> Many-banded Pipefish [66717]		Species or species habitat may occur within area
<a href="#">Doryrhamphus negrosensis</a> Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
<a href="#">Festucalex scalaris</a> Ladder Pipefish [66216]		Species or species habitat may occur within area
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area
<a href="#">Halicampus brocki</a> Brock's Pipefish [66219]		Species or species habitat may occur within area
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
<a href="#">Halicampus nitidus</a> Glittering Pipefish [66224]		Species or species habitat may occur within area
<a href="#">Halicampus spinostris</a> Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
<a href="#">Haliichthys taeniophorus</a> Ribbioned Pipehorse, Ribbioned Seadragon [66226]		Species or species habitat may occur within area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
<a href="#">Hippocampus histrix</a> Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area
<a href="#">Hippocampus spinosissimus</a> Hedgehog Seahorse [66239]		Species or species habitat may occur within area
<a href="#">Hippocampus trimaculatus</a> Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
<a href="#">Micrognathus micronotopterus</a> Tidepool Pipefish [66255]		Species or species habitat may occur within area
<a href="#">Phoxocampus belcheri</a> Black Rock Pipefish [66719]		Species or species habitat may occur within area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus longirostris</a> Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
<b>Mammal</b>		
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat known to occur within area
<b>Reptile</b>		
<a href="#">Acalyptophis peronii</a> Horned Seasnake [1114]		Species or species habitat may occur within area
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Aipysurus duboisii</a> Dubois' Seasnake [1116]		Species or species habitat may occur within area
<a href="#">Aipysurus eydouxii</a> Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Aipysurus laevis</a> Olive Seasnake [1120]		Species or species habitat may occur within area
<a href="#">Aipysurus tenuis</a> Brown-lined Seasnake [1121]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Astrotia stokesii</a> Stokes' Seasnake [1122]		Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area
<a href="#">Chitulia ornata as Hydrophis ornatus</a> Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area
<a href="#">Disteira major</a> Olive-headed Seasnake [1124]		Species or species habitat may occur within area
<a href="#">Emydocephalus annulatus</a> Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
<a href="#">Ephalophis greyi</a> North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation known to occur within area
<a href="#">Hydrelaps darwiniensis</a> Black-ringed Seasnake [1100]		Species or species habitat may occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Hydrophis elegans</a> Elegant Seasnake [1104]		Species or species habitat may occur within area
<a href="#">Hydrophis macdowelli as Hydrophis mcdowelli</a> Small-headed Seasnake [75601]		Species or species habitat may occur within area
<a href="#">Leioselasma czeblukovi as Hydrophis czeblukovi</a> Fine-spined Seasnake, Geometrical Seasnake [87374]		Species or species habitat may occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
<a href="#">Pelamis platurus</a> 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		
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area
<a href="#">Balaenoptera bonaerensis</a> Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area



Current Scientific Name	Status	Type of Presence
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Feresa attenuata</a> Pygmy Killer Whale [61]		Species or species habitat may occur within area
<a href="#">Globicephala macrorhynchus</a> Short-finned Pilot Whale [62]		Species or species habitat may occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
<a href="#">Kogia breviceps</a> Pygmy Sperm Whale [57]		Species or species habitat may occur within area
<a href="#">Kogia sima as Kogia simus</a> Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
<a href="#">Lagenodelphis hosei</a> Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Breeding known to occur within area
<a href="#">Mesoplodon densirostris</a> Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
<a href="#">Orcaella heinsohni as Orcaella brevirostris</a> Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Peponocephala electra</a> Melon-headed Whale [47]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pseudorca crassidens</a> False Killer Whale [48]		Species or species habitat likely to occur within area
<a href="#">Sousa sahalensis as Sousa chinensis</a> Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Stenella coeruleoalba</a> Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
<a href="#">Stenella longirostris</a> Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
<a href="#">Steno bredanensis</a> Rough-toothed Dolphin [30]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area
<a href="#">Ziphius cavirostris</a> Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

### Australian Marine Parks [\[ Resource Information \]](#)

Park Name	Zone & IUCN Categories
Dampier	Habitat Protection Zone (IUCN IV)
Montebello	Multiple Use Zone (IUCN VI)

### Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Aug - Sep		
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Nesting	Known to occur
Nov - May		
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Nesting	Known to occur

### Extra Information

#### EPBC Act Referrals [\[ Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status
<a href="#">North West Shelf Project Extension, Carnarvon Basin, WA</a>	2018/8335		Approval
<a href="#">Project Highclere Cable Lay and Operation</a>	2022/09203		Completed
Controlled action			
<a href="#">Construct and operate LNG &amp; domestic gas plant including onshore and offshore facilities - Wheatston</a>	2008/4469	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Controlled action</b>			
<a href="#">Develop Jansz-lo deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-</a>	2005/2184	Controlled Action	Post-Approval
<a href="#">Development of Browse Basin Gas Fields (Upstream)</a>	2008/4111	Controlled Action	Completed
<a href="#">Equus Gas Fields Development Project, Carnarvon Basin</a>	2012/6301	Controlled Action	Completed
<a href="#">Gorgon Gas Development</a>	2003/1294	Controlled Action	Post-Approval
<a href="#">Gorgon Gas Development 4th Train Proposal</a>	2011/5942	Controlled Action	Post-Approval
<a href="#">Pluto Gas Project</a>	2005/2258	Controlled Action	Completed
<a href="#">Pluto Gas Project Including Site B</a>	2006/2968	Controlled Action	Post-Approval
<a href="#">The Scarborough Project - FLNG &amp; assoc subsea infrastructure, Carnarvon Basin</a>	2013/6811	Controlled Action	Post-Approval
<b>Not controlled action</b>			
<a href="#">Bollinger 2D Seismic Survey 200km North of North West Cape WA</a>	2004/1868	Not Controlled Action	Completed
<a href="#">Drilling of an exploration well Gats-1 in Permit Area WA-261-P</a>	2004/1701	Not Controlled Action	Completed
<a href="#">Exploration of appraisal wells</a>	2006/3065	Not Controlled Action	Completed
<a href="#">Hess Exploration Drilling Programme</a>	2007/3566	Not Controlled Action	Completed
<a href="#">Jansz-2 and 3 Appraisal Wells</a>	2002/754	Not Controlled Action	Completed
<a href="#">Project Highclere Geophysical Survey</a>	2021/9023	Not Controlled Action	Completed
<a href="#">Telstra North Rankin Spur Fibre Optic Cable</a>	2016/7836	Not Controlled Action	Completed
<a href="#">To construct and operate an offshore submarine fibre optic cable, WA</a>	2014/7373	Not Controlled Action	Completed
<a href="#">Wheatstone 3D seismic survey, 70km north of Barrow Island</a>	2004/1761	Not Controlled Action	Completed
<b>Not controlled action (particular manner)</b>			

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32</a>	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">"Leanne" offshore 3D seismic exploration, WA-356-P</a>	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D marine seismic survey</a>	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">2D Seismic Survey</a>	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">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</a>	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D Marine Seismic Survey in WA 457-P &amp; WA 458-P, North West Shelf, offshore WA</a>	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">3D seismic survey</a>	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Aperio 3D Marine Seismic Survey, WA</a>	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Balnaves Condensate Field Development</a>	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Bonaventure 3D seismic survey</a>	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Cable Seismic Exploration Permit areas WA-323-P and WA-330-P</a>	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">CGGVERITAS 2010 2D Seismic Survey</a>	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
		Manner)	
<a href="#">DAVROS MC 3D marine seismic survey northwaet of Dampier, WA</a>	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Deep Water Drilling Program</a>	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Deep Water Northwest Shelf 2D Seismic Survey</a>	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Demeter 3D Seismic Survey, off Dampier, WA</a>	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Drilling 35-40 offshore exploration wells in deep water</a>	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Geco Eagle 3D Marine Seismic Survey</a>	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Glencoe 3D Marine Seismic Survey WA-390-P</a>	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Harmony 3D Marine Seismic Survey</a>	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Honeycombs MC3D Marine Seismic Survey</a>	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Julimar Brunello Gas Development Project</a>	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Lion 2D Marine Seismic Survey</a>	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval



Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action (particular manner)</b>			
<a href="#">Moosehead 2D seismic survey within permit WA-192-P</a>	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Osprey and Dionysus Marine Seismic Survey</a>	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Reindeer gas reservoir development, Devil Creek, Carnarvon Basin - WA</a>	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Santos Winchester three dimensional seismic survey - WA-323-P &amp; WA-330-P</a>	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Scarborough Development nearshore component, NWS, WA</a>	2018/8362	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Stag 4D &amp; Reindeer MAZ Marine Seismic Surveys, WA</a>	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Stag Off-bottom Cable Seismic Survey</a>	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Undertake a 3D marine seismic survey</a>	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">West Panaeus 3D seismic survey</a>	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Westralia SPAN Marine Seismic Survey, WA &amp; NT</a>	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Wheatstone 3D MAZ Marine Seismic Survey</a>	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval
<a href="#">Wheatstone Iago Appraisal Well Drilling</a>	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
<a href="#">Wheatstone lagoon Appraisal Well Drilling</a>	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval

## Key Ecological Features [\[ Resource Information \]](#)

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
<a href="#">Ancient coastline at 125 m depth contour</a>	North-west
<a href="#">Continental Slope Demersal Fish Communities</a>	North-west
<a href="#">Exmouth Plateau</a>	North-west

## Biologically Important Areas

Scientific Name	Behaviour	Presence
<b>Marine Turtles</b>		
<a href="#">Caretta caretta</a>		
Loggerhead Turtle [1763]	Internesting buffer	Known to occur
<a href="#">Chelonia mydas</a>		
Green Turtle [1765]	Internesting buffer	Known to occur
<a href="#">Eretmochelys imbricata</a>		
Hawksbill Turtle [1766]	Internesting buffer	Known to occur
<a href="#">Natator depressus</a>		
Flatback Turtle [59257]	Internesting buffer	Known to occur
<b>Seabirds</b>		
<a href="#">Ardena pacifica</a>		
Wedge-tailed Shearwater [84292]	Breeding	Known to occur
<a href="#">Sterna dougallii</a>		
Roseate Tern [817]	Breeding	Known to occur
<a href="#">Sternula nereis</a>		
Fairy Tern [82949]	Breeding	Known to occur

## Sharks



Scientific Name	Behaviour	Presence
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Foraging	Known to occur
<b>Whales</b>		
<a href="#">Balaenoptera musculus brevicauda</a> Pygmy Blue Whale [81317]	Distribution	Known to occur
<a href="#">Balaenoptera musculus brevicauda</a> Pygmy Blue Whale [81317]	Migration	Known to occur
<a href="#">Megaptera novaeangliae</a> 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](#)
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- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [-Museum Victoria](#)
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- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
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- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
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- [-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 STRATEGY SELECTION AND EVALUATION**

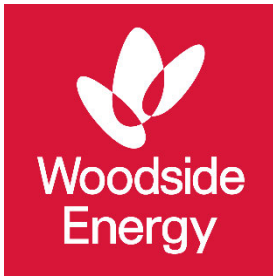
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# Oil Spill Preparedness and Response Mitigation Assessment for Scarborough Seabed Intervention and Trunkline Installation

Corporate HSE  
Hydrocarbon Spill Preparedness

May 2023  
Revision 0a

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## EXECUTIVE SUMMARY

Woodside Energy Scarborough Pty Ltd (Woodside) has developed its oil spill preparedness and response position for the Scarborough Seabed Intervention and Trunkline Installation, hereafter known as the Petroleum Activities Program (PAP) techniques. This document demonstrates 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	<p><b>Credible Scenario-01 (CS-01):</b> A short-term (instantaneous) surface release of 2000 m<sup>3</sup> of marine diesel from a vessel collision outside Mermaid Sound.</p> <p><b>Credible Scenario-02 (CS-02):</b> A short-term (instantaneous) surface release of 2000 m<sup>3</sup> of marine diesel from a vessel collision within Montebello Marine Park.</p> <p><b>Credible Scenario-03 (CS-03):</b> A short-term (instantaneous) surface release of 2000 m<sup>3</sup> of marine diesel from a vessel collision in the Scarborough field (at the proposed Floating Production Unit (FPU) location).</p>	Section 2.2			
Hydrocarbon Properties	<p>Under constant 5 kn wind conditions approximately 45% of the oil is predicted to evaporate within 24 hours. 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.</p> <p>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 (&lt;1%).</p>	Section 6.7.2 of the EP  Appendix A of the First Strike Plan			
Modelling Results	<p>A quantitative, stochastic assessment has been undertaken for credible spill scenarios to help assess the environmental risk of a hydrocarbon spill. A total of 100-200 replicate simulations were completed for the scenarios to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter.</p> <p>Deterministic modelling was conducted for CS-01 and CS-02 following assessment of stochastic modelling. Shoreline contact above 100 g/m<sup>2</sup> was not predicted from stochastic modelling of CS-02 or CS-03.</p>	Section 2.3			
	<b>Deterministic Modelling Results</b>				
	<b>CS-01 (Outside Mermaid Sound)</b>				
	<table border="1"> <tr> <td>Minimum time to shoreline contact (above 100 g/m<sup>2</sup>)</td> <td>Dampier Archipelago – 53 hours (2.2 days)</td> </tr> <tr> <td>Largest volume ashore at any single Response Priority Area (RPA) (above 100 g/m<sup>2</sup>)</td> <td>Dampier Archipelago – 3 m<sup>3</sup></td> </tr> </table>	Minimum time to shoreline contact (above 100 g/m <sup>2</sup> )	Dampier Archipelago – 53 hours (2.2 days)	Largest volume ashore at any single Response Priority Area (RPA) (above 100 g/m <sup>2</sup> )	Dampier Archipelago – 3 m <sup>3</sup>
Minimum time to shoreline contact (above 100 g/m <sup>2</sup> )	Dampier Archipelago – 53 hours (2.2 days)				
Largest volume ashore at any single Response Priority Area (RPA) (above 100 g/m <sup>2</sup> )	Dampier Archipelago – 3 m <sup>3</sup>				

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	Largest total shoreline accumulation (above 100 g/m <sup>2</sup> ) all shorelines	Dampier Archipelago – 156 g/m <sup>2</sup>	
Net Environmental Benefit Analysis	Identified as potentially having a net environmental benefit (dependent on the actual spill scenario) and carried forward for further assessment are: <ul style="list-style-type: none"> <li>• Monitor and evaluate</li> <li>• Shoreline clean-up</li> <li>• Source control via vessel SOPEP (Ship Oil Pollution Emergency Plan)</li> <li>• Oiled wildlife response</li> <li>• Shoreline protection and deflection</li> <li>• Scientific monitoring programs</li> </ul>		<b>Section 4</b>
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 are presented in <b>Section 2</b> , without the implementation of considered additional, alternative or improved control measures.		<b>Section 6</b>

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# 1 INTRODUCTION

## 1.1 Overview

Woodside Energy Scarborough Pty Ltd (Woodside) has developed its oil spill preparedness and response position for the Scarborough Seabed Intervention and Trunkline Installation activity, hereafter known as the Petroleum Activities Program (PAP). This document outlines Woodside's decisions and techniques for responding to a hydrocarbon loss of containment event and the process for determining its level of hydrocarbon spill preparedness.

## 1.2 Purpose

This document, together with the documents listed below, meet the requirements of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (OPGGS Environment Regulations) relating to hydrocarbon spill response arrangements.

- The Scarborough Seabed Intervention and Trunkline Installation Environment Plan (EP)
- Oil Pollution Emergency Arrangements (OPEA) (Australia)
- The Scarborough Seabed Intervention and Trunkline Installation Oil Pollution Emergency Plan (OPEP) including
  - First Strike Response Plan
  - Relevant Operations Plans
  - Relevant Tactical Response Plans ([TRPs](#), also see [ANNEX E](#))
  - 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 content of this document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness. It should be read in conjunction with the documents listed in Table 1-1. The location of the Petroleum Activity Program (PAP) is shown in Figure 3-2 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 (see **Section 4**).

The response will continue as described in **Section 5** until the response termination criteria have been met, as set out in **ANNEX B: Operational Monitoring Activation and Termination Criteria**.

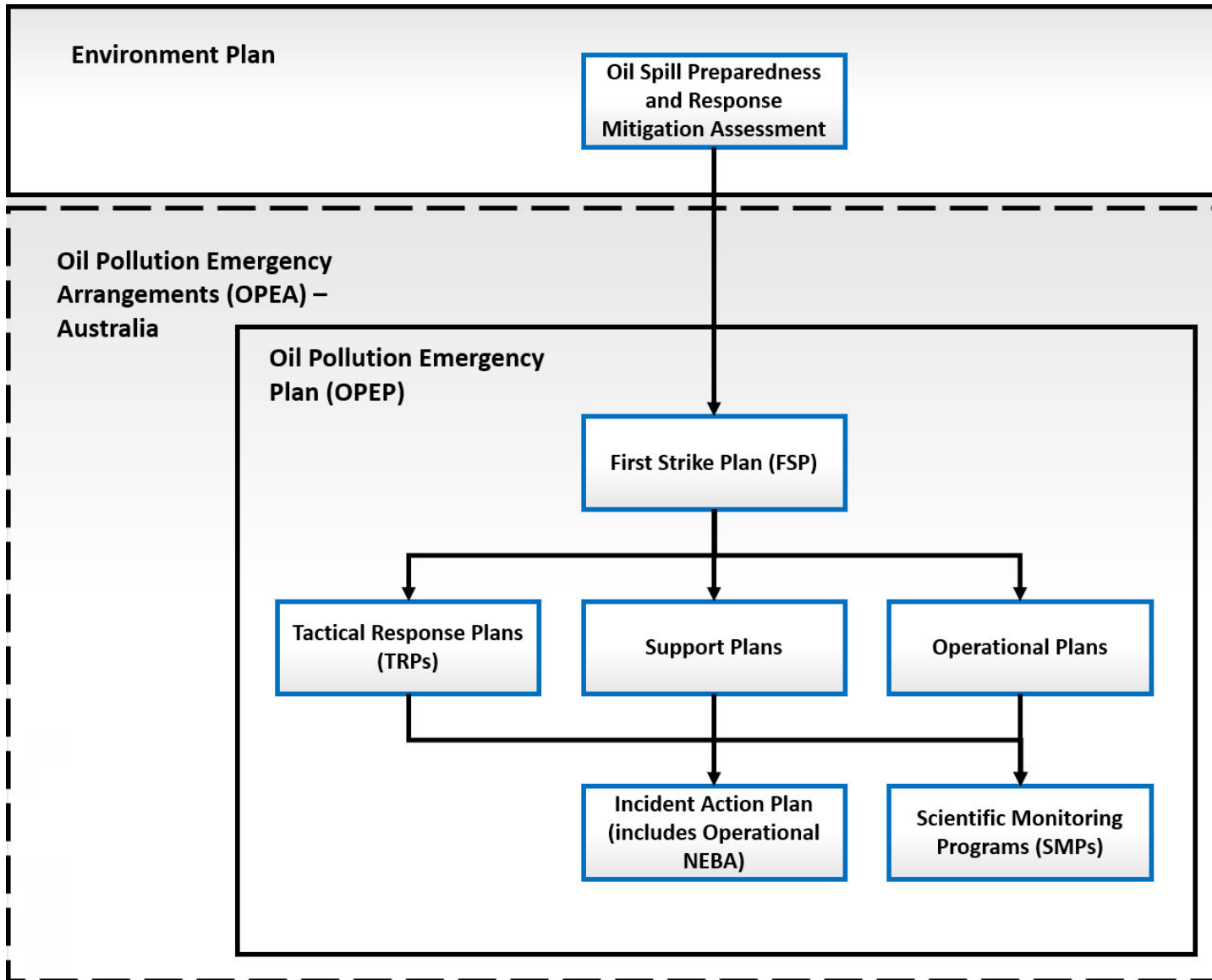


Figure 1-1: Example of Woodside hydrocarbon spill document structure

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**Table 1-1: Hydrocarbon Spill preparedness and response – document references**

Document	Document overview	Stakeholders	Relevant information	Document Details (where relevant)
<b>Scarborough Seabed Intervention and Trunkline Installation Environment Plan (EP)</b>	Demonstrates that potential adverse impacts on the environment associated with the Scarborough Seabed Intervention and Trunkline Installation (during both routine and non-routine operations) are mitigated and managed to As Low As Reasonably Practicable (ALARP) and will be of an acceptable level.	NOPSEMA Woodside internal	EP Section 6 (Identification and evaluation of environmental risks and impacts, including credible spill scenarios)  EP Section 7 (Implementation strategy) including:  EP Section 7.9 – (Emergency preparedness and response)  EP Section 7.8 (Reporting and compliance)  EP Section 7.9 (Performance outcomes, standards and measurement criteria)	
<b>Oil Pollution Emergency Arrangements (OPEA) Australia</b>	Describes the arrangements and processes adopted by Woodside when responding to a hydrocarbon spill from a petroleum activity.	Regulatory agencies Woodside internal	All	
<b>Oil Spill Preparedness and Response Mitigation Assessment for the Scarborough Seabed Intervention and Trunkline Installation (this document)</b>	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.	

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Document	Document overview	Stakeholders	Relevant information	Document Details (where relevant)
<b>Scarborough Seabed Intervention and Trunkline Installation Oil Pollution First Strike Response Plan</b>	<p>Facility specific document providing details and tasks required to mobilise a first strike response.</p> <p>Primarily applied to the first 24 hours of a response until a full Incident Action Plan (IAP) specific to the event is developed.</p> <p>Oil Pollution First Strike Response Plans are intended to be the first document used to provide immediate guidance to the responding Incident Management Team (IMT).</p>	<p>Site-based IMT for initial response, activation and notification.</p> <p>CIMT for initial response, activation and notification.</p> <p>CIMT: Control function in an ongoing spill response for activity-specific response information.</p>	<p>Initial notifications and reporting required within the first 24 hours of a spill event.</p> <p>Relevant spill response options that could be initiated for mobilisation in the event of a spill.</p> <p>Recommended pre-planned tactics.</p> <p>Details and forms for use in immediate response. Activation process for oil spill trajectory modelling (OSTM), aerial surveillance and oil spill tracking buoy details.</p>	
<b>Operational Plans</b>	<p>Lists the actions required to activate, mobilise and deploy personnel and resources to commence response operations.</p> <p>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.</p> <p>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.</p>	<p>CIMT: Operations and Logistics functions for first strike activities.</p> <p>CIMT: Planning Function to help inform the IAP on resources available.</p>	<p>Locations from where resources may be mobilised.</p> <p>How resources will be mobilised.</p> <p>Details of where resources may be mobilised to and what facilities are required once the resources arrive.</p> <p>Details on how to use resources to undertake a response.</p>	<p>Operational monitoring plan</p> <p>Protection and deflection</p> <p>Shoreline clean-up</p> <p>Oiled wildlife</p> <p>Scientific monitoring</p>
<b>Tactical Response Plans</b>	<p>Provides options for response techniques in selected RPAs.</p> <p>Provides site, access and deployment information to support a response at the location.</p>	<p>CIMT: Planning Function to help develop IAPs, and Logistics function to assist with determining resources required.</p>	<p>Indicative response techniques.</p> <p>Access requirements and/or permissions.</p> <p>Relevant information for undertaking a response at that site.</p> <p>Where applicable, may include equipment deployment locations and site layouts.</p>	<p>For full list of relevant Tactical Plans please refer to <a href="#">ANNEX E: Tactical Response Plans</a></p>

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Document	Document overview	Stakeholders	Relevant information	Document Details (where relevant)
<b>Support Plans</b>	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 (First Strike Response) IT (Extended Response) Communications (First Strike Response) Communications (Extended Response) Stakeholder Engagement Accommodation & Catering Waste Management Guidance for Oil Spill Claims Management (Land based) Hydrocarbon Spill Responder Health Monitoring Guideline

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## **2 RESPONSE PLANNING PROCESS**

This document details Woodside's process for identifying potential response options for the hydrocarbon release scenarios, identified in the EP. Figure 2-1 outlines the interaction between Woodside's response, planning/preparedness and selection process.

This structure has been used because it shows how the planning and preparedness activities inform a response and provides indicative guidance on what activities would be undertaken, in sequential order, if a real event were to occur. The process also evaluates alternative, additional and/or improved control measures specific to the PAP.

The Scarborough Seabed Intervention and Trunkline Installation First Strike Response 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.

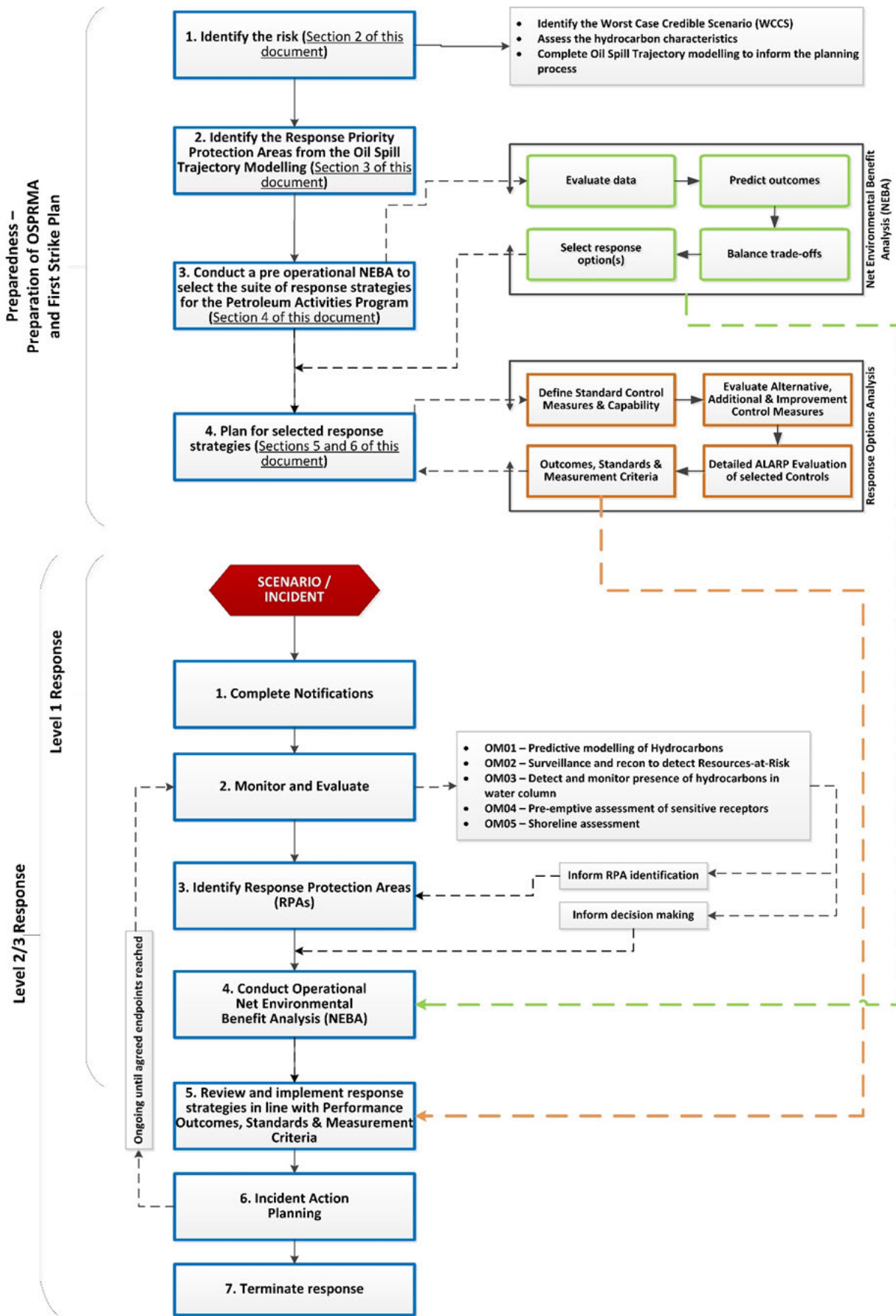


Figure 2-1: Response planning and selection process

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## 2.1 Response planning process outline

This document is expanded below to provide additional context on the key steps in determining capability, evaluating ALARP and hydrocarbon spill response requirements.

- Section 1. INTRODUCTION
- Section 2. RESPONSE PLANNING PROCESS
  - Identification of worst-case credible scenario(s) (WCCS)
  - Spill modelling for WCCS.
- Section 3. IDENTIFY RESPONSE PROTECTION AREAS (RPAs)
  - Areas predicted to be contacted at concentration  $>100 \text{ g/m}^2$  <sup>1</sup>.
- 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 the 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

<sup>1</sup> This represents the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat.

### 2.1.1 Response planning assumptions – timing, resourcing and effectiveness

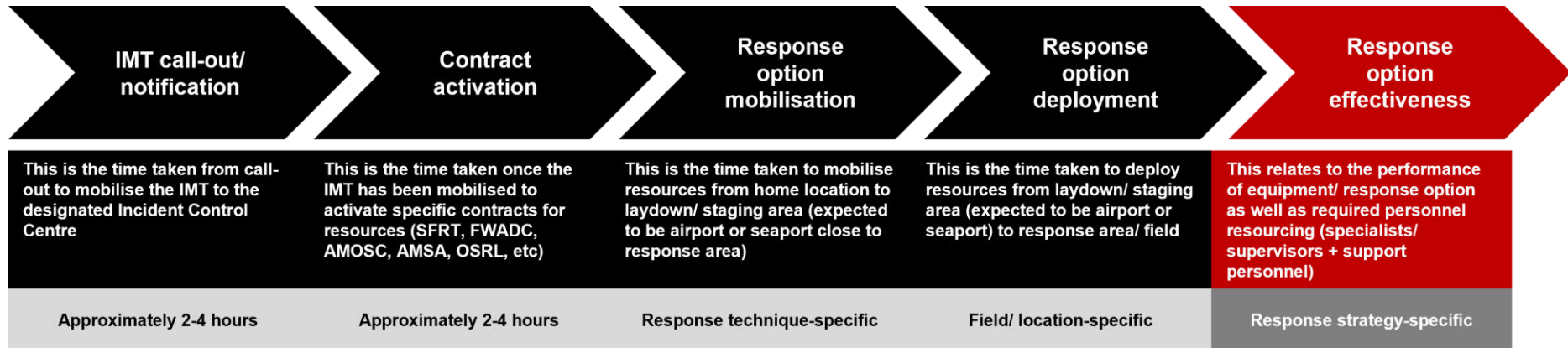


Figure 2-2: Response Planning Assumptions – Timing, Resourcing and Effectiveness

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## 2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the PAP have been identified during the risk assessment process (Section 6 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 6 of the EP. 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.

Stochastic modelling has been completed for a worst case spill scenario of an instantaneous surface release of 2000 m<sup>3</sup> of marine diesel, the volume of the largest single fuel tank. The modelling results are representing loss of vessel fuel tank integrity after a collision, at three locations: outside Mermaid Sound (CS-01), within Montebello Marine Park (CS-02) and at the proposed Floating Production Unit (FPU) location in the Scarborough field (CS-03). The surface release of marine diesel caused by vessel collision (CS-01, CS-02 or CS-03) has been considered for response planning purposes, given the large volume released instantaneously. Marine fuel loss during bunkering (CS-04) has a significantly smaller marine diesel release volume of a maximum of 55 m<sup>3</sup>, based on a 15 min delay to shut off pumps and a maximum transfer rate of 220 m<sup>3</sup>/h, Hydraulic fluid loss of up to 8 m<sup>3</sup> from hydraulically actuated equipment (Scenario 5) is also considered credible. Both a 55 m<sup>3</sup> bunkering spill and 8 m<sup>3</sup> hydraulic fluid spill are considered to be within the risk profile and spill response capability requirements of CS-01, CS-02 or CS-03.



**Table 2-1: Petroleum Activities Program credible spill scenarios**

Scenario	Scenario selected for planning purposes	Scenario description	Maximum credible volume released (liquid m <sup>3</sup> )	Incident Level	Hydrocarbon (HC) type	Residual proportion	Residual volume (liquid m <sup>3</sup> )
CS-01	Yes	Short-term (instantaneous) surface release of marine diesel after a vessel collision outside Mermaid Sound.	2000	2	Marine Diesel	5.0 %	100
CS-02	Yes	Short-term (instantaneous) surface release of marine diesel after a vessel collision within Montebello Marine Park.	2000	2	Marine Diesel	5.0 %	100
CS-03	Yes	Short-term (instantaneous) surface release of marine diesel after a vessel collision at the FPU location in the Scarborough field.	2000	2	Marine Diesel	5.0 %	100
CS-04	No	Marine fuel loss during bunkering: Short-term (instantaneous) release of marine diesel	55	1	Marine Diesel	5.0 %	2.75
CS-05	No	Loss of containment from hydraulic systems of hydraulically actuated equipment	8	1	Hydraulic Fluid	5.0 %	0.4

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## 2.2.1 Hydrocarbon characteristics

### Marine Diesel (API 37.2 by the American Petroleum Institute)

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.

## 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 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 (Spill Impact Mapping and Analysis Program, SIMAP) models are both used for stochastic and deterministic trajectory modelling. They have been developed over three decades of planning, exercises, actual responses, several peer reviews, and validation studies. OILMAP was originally derived from the United States Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Type A model (French et al. 1996), for assessing marine transport, biological impact and economic 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. 2007; French McCay et al. 2007).

Further to this, the algorithms have been updated using the latest findings from the Macondo/Deepwater Horizon well blowout in the Gulf of Mexico and validated according to the Deepwater Horizon (DWH) oil spill in support of the 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 has been completed for the following scenarios outlined in **Table 2-1**. CS-01: A short-term (instantaneous) surface release of 2000 m<sup>3</sup> of marine diesel, representing loss of vessel fuel tank integrity after a collision outside Mermaid Sound, CS-02: A short-term (instantaneous) surface release of 2000 m<sup>3</sup> of marine diesel, representing loss of vessel fuel tank integrity after a collision within Montebello Marine Park (MP) and CS-03: A short-term (instantaneous) surface release of 2000 m<sup>3</sup> of marine diesel, representing loss of vessel fuel tank integrity after a collision at the FPU location in the Scarborough field. A quantitative, stochastic assessment has been undertaken for credible spill scenarios to help assess the environmental consequences of a hydrocarbon spill.

Numerous simulations (100-200) were completed to test for trends and variations in the trajectory and weathering of the spilled oil, with an even number of replicates completed using samples of metocean data that commenced within each calendar quarter. Further details relating to the assessments for the 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 6 of the EP. As the weathering of

different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, a different EMBA is presented for each fate within the EP.

A conservative approach – adopting accepted 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 to determine the EMBA and environmental impacts**

Threshold Scarborough Seabed Intervention and Trunkline Installation	Description
10 g/m <sup>2</sup>	Surface hydrocarbon
100 ppb	Entrained hydrocarbon (ppb)
50 ppb	Dissolved aromatic hydrocarbon (ppb)
100 g/m <sup>2</sup>	Shoreline accumulation

### 2.3.2 Deterministic modelling

Woodside uses deterministic modelling results to evaluate risks and impacts and response capability requirements. These results are provided in both shapefile and data table format with each row of the data table representing a 1 km<sup>2</sup> cell. This cell size has been used as it represents the approximate area that a single containment and recovery operation or surface dispersant operation (single sortie or vessel spraying) can effectively treat in one ten (10) hour day. Smaller cell sizes have been considered but would not change the response need as the potential distance between cells would not allow multiple cells to be treated per day by response operations. Additionally, a 1km<sup>2</sup> cell is expected to allow averaging of threshold concentrations and mass across the spatial extent to represent a conservative approach (patches of oil and windrows) to response planning that simulates operational monitoring feedback in a real event.

The deterministic modelling data provides an indication of the response need by displaying the potential surface area and volume that may be treated or recovered by response operations. Existing capability is reviewed to approximate the surface area and volumes that can be treated or removed and a range of alternate, improved and additional options to reduce risks and impacts to as low as reasonably practical (ALARP) are considered.

Woodside recognises that no single response technique will treat all available subsea or surface oil and that a combination of response techniques will be required for the identified scenario. Even with the significant resources available to Woodside through existing capability and third-party resources, the primary offshore response techniques of surface dispersant application and containment and recovery will only treat or recover a minor proportion (<30%) of the available surface hydrocarbons based on previous response experience.

Woodside is committed to a realistic, scalable response capability that is commensurate to the level of risk and able to be practically implemented and feasibly sustained.

### 2.3.3 Response planning thresholds for surface and shoreline hydrocarbon exposure

Thresholds to determine the EMBA are used to predict and assess environmental impacts and inform the scientific monitoring program (SMP), however, they do not appropriately represent the thresholds at which an effective response can be implemented. Additional response thresholds are used for response planning and to determine areas where response techniques would be most effective. The deterministic modelling is then used to assess the nature and scale of a response.

In the event of an actual response, existing deterministic modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform Incident Management Team decisions.

The deterministic spill modelling outputs are presented at response planning thresholds for surface hydrocarbons for the WCCS. Surface spill concentrations are expressed as grams per square metre ( $\text{g}/\text{m}^2$ ) (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 ( $\text{g}/\text{m}^2$ )	Description	Bonn Agreement Oil Appearance Code (BAOAC)	Mass per area ( $\text{g}/\text{m}^2$ )
>10	Predicted minimum threshold for commencing operational monitoring <sup>2</sup>	Code 3 – Dull metallic colour	5 to 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application <sup>3</sup>	Code 4 – Discontinuous true oil colour	50 to 200
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application	Code 5 – Continuous true oil colour	>200
Shoreline hydrocarbon concentration ( $\text{g}/\text{m}^2$ )	Description	National Plan Guidance on Oil Contaminated Foreshores	Mass per area ( $\text{g}/\text{m}^2$ )
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 to 1000

The surface thickness of oil at which dispersants are typically effective is approximately  $100 \text{ g}/\text{m}^2$ . However, substantial variations occur in the thickness of the oil within the slick, and most fresh crude oils spread within a few hours, so overall the average thickness is 0.1 mm (or approx.  $100 \text{ g}/\text{m}^2$ ) (International Tanker Owners Pollution Federation [ITOPF] 2011). Additionally, the recommended rate of application for surface dispersant is typically 1-part dispersant to 20 or 25 parts of spilled oil. These figures assume a 0.1 mm slick thickness, averaged over the thickest part of the spill, to 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 Australian Maritime Safety Authority (AMSA, 2015) indicates spreading of spills of Group II or III products will rapidly decrease slick thickness over the first 24 hours of a spill resulting in the potential requirement of up to a ten (10) fold increase in capability on day 2 to achieve the same level of performance.

Further guidance from the European Maritime Safety Authority (EMSA) states spraying the 'metallic' looking area of an oil slick (Bonn Agreement Oil Appearance Code [BAOAC] 3, approx.  $5 - 50 \mu\text{m}$ )

<sup>2</sup> Operational monitoring will be undertaken from the outset of a spill whether or not the minimum threshold has been reached. This is needed to assess the nature of the spill and track its location. This will then inform the need for any additional monitoring and/or response techniques.

<sup>3</sup> At  $50 \text{ g}/\text{m}^2$ , 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.

with dispersant from spraying gear designed to treat an oil layer 0.1 mm (100 µm) thick, will inevitably cause dispersant over-treatment by a factor of 2 to 20 times (EMSA 2012).

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (Discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

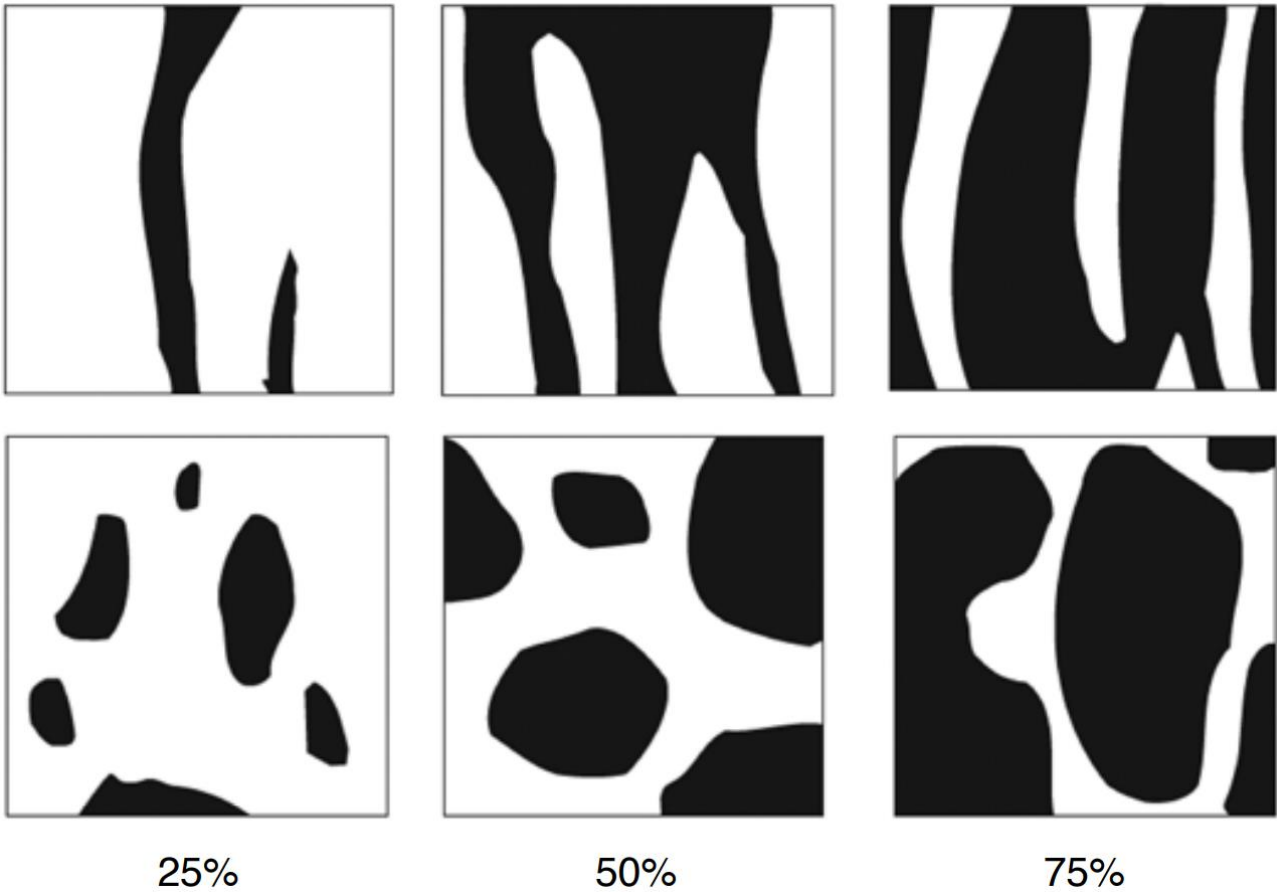
Spraying areas of oil designated as BAOAC Code 5 with dispersant (Continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant. Repeated application of these areas of thicker oil, or increased dosage ratios, will be required to achieve the recommended treatment rate of dispersant (EMSA 2012).

Guidance from 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 oil thickness can vary by orders of magnitude within distinct areas of a slick, thus the actual slick thickness and oil distribution of target areas are crucial for determining response method feasibility. Further to this, ITOPF also states in terms of oil spill response, sheen can be disregarded as it represents a negligible quantity of oil, cannot be recovered or otherwise dealt with to a significant degree by existing response techniques, and is likely to dissipate readily and naturally (ITOPF, 2014).

**Figure 2-3** 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 50 g/m<sup>2</sup> was chosen as an average / equilibrium thickness (50 g/m<sup>2</sup> is an average is 50% coverage of 0.1 mm Bonn Agreement Code 4 - discontinuous true oil colour, or 25% coverage of 0.2 mm Bonn Agreement Code 5 – continuous true oil colour which would represent small patches of thick oil or wind-rows.



**Figure 2-3: Proportion of total area coverage (AMSA, 2014)**

**Figure 2-4** illustrates the general relationships between on-water response techniques and slick thickness. Windrows, 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.

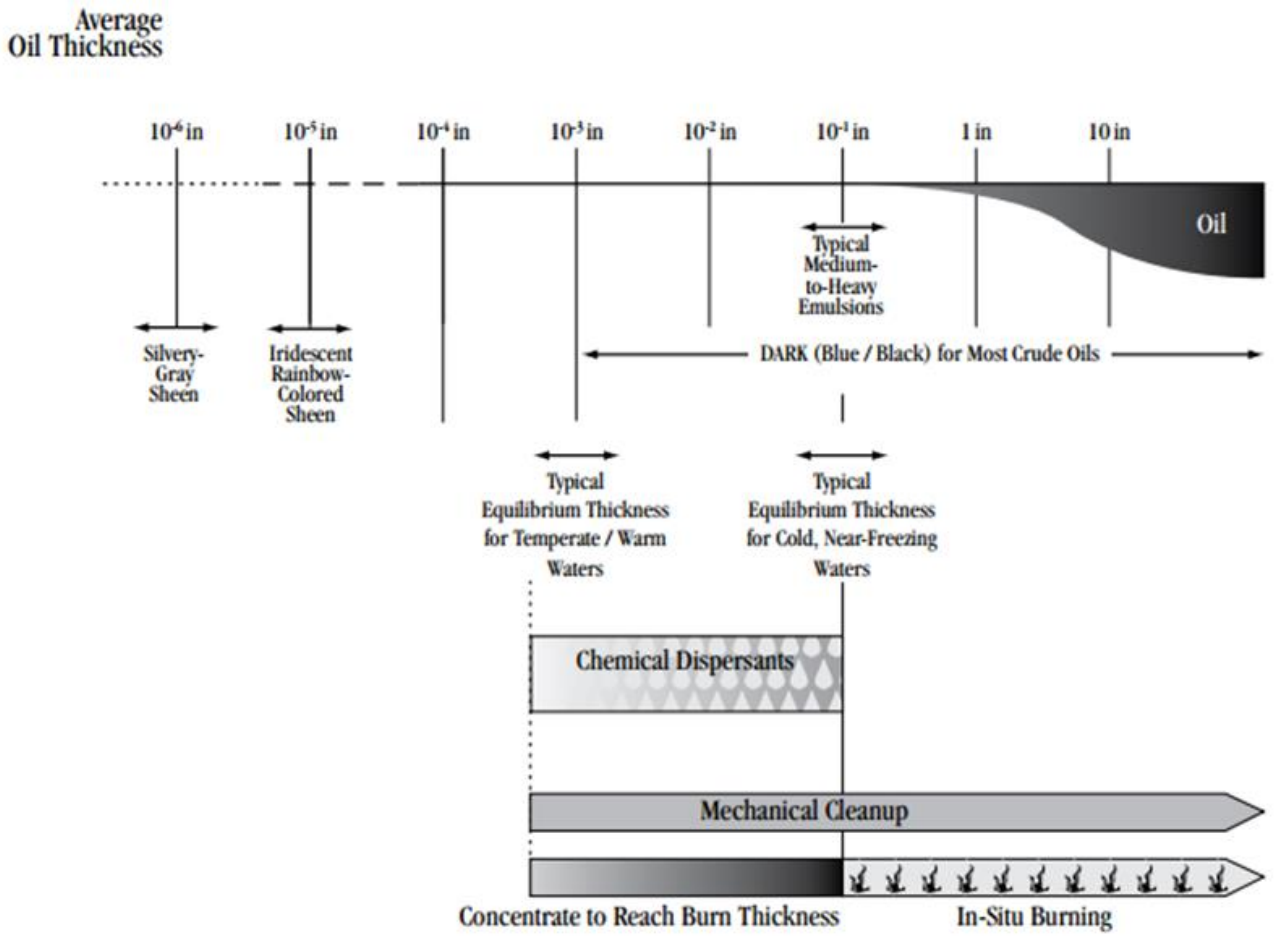


Figure 2-4: Oil thickness versus potential response options (from Allen & Dale 1996)

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 (0.6–0.9 m) 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 4-3 and Section 4.2.3.3).

### 2.3.4.1 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
10,000	Predicted maximum viscosity for effective surface dispersant operations	Sometimes possible to disperse	5,000-10,000

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.

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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 1000 or 2000 mPa.s (1000 – 2000 cSt) and then declining to a low level with an oil viscosity of 10,000 mPa.s (10,000 cSt). It was considered that some generally applicable viscosity limit, such as 2000 or 5000 mPa.s (2000 – 5000 cSt), could be applied to all oils.”

However, modern oil spill dispersants are generally effective up to an oil viscosity of 5000 mPa.s (5000 cSt) or more, and their performance gradually decreases with increasing viscosity; oils with a viscosity of more than 10,000 are, in most cases, no longer dispersible. Guidance from the Centre of Documentation, Research and Experimentation (CEDRE; EMSA, 2012) also indicates products with a range of 500 – 5000 cSt at sea temperature are generally possible to disperse, while 5000 – 10,000 cSt at sea temperature above pour point are sometimes possible to disperse, with products beyond 10,000 cSt at sea temperature below pour point are generally impossible to disperse. The potential use of dispersants is evaluated in **Table 4-3**.

To support decision making and response planning, a threshold of 10,000 cSt at sea temperature was chosen as a conservative estimate of maximum viscosity for surface dispersant spraying operations.

The thresholds described above are compared with the modelling results for the WCCS (**Table 2-5**).

### 2.3.5 Spill modelling results

Details of the credible scenarios and modelling inputs are included along with deterministic results in **Table 2-5**. Modelling was conducted for all scenarios with three different model outputs being used to determine the worst-case credible parameters. CS-01 provided the WCCS for the shortest time for any oil to drift from the source to both the offshore boundary of a sensitive receptor and to the receptor shoreline, relative to the commencement of the spill.

The selected deterministic runs used to represent the WCCS are:

- Fastest time to shoreline contact (above 100 g/m<sup>2</sup>);
- Largest volume ashore at any single RPA (above 100 g/m<sup>2</sup>); and
- Largest volume ashore on all shorelines from a single model run (above 100 g/m<sup>2</sup>).

Both stochastic and deterministic modelling were completed for CS-01 and CS-02 (although no shoreline contact is predicted for CS-02). Stochastic modelling only was undertaken for CS-03. The deterministic modelling results presented below are therefore derived from the deterministic modelling for CS-01.

**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	Worst case spill scenario of an instantaneous surface release of 2000 m <sup>3</sup> of marine diesel, representing loss of vessel fuel tank integrity after a collision: <ul style="list-style-type: none"> <li>- Outside Mermaid Sound (Scenario 1)</li> <li>- Within Montebello Marine Park (Scenario 2)</li> <li>- In the Scarborough Field (FPU location) (Scenario 3)</li> </ul>
Maximum residual surface hydrocarbon after weathering	100 m <sup>3</sup>
Deterministic Modelling results	
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a threshold of 100 g/m <sup>2</sup> )	Surface release of Marine Diesel (CS-01) 2.2 days (53 hours) at Dampier Archipelago
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m <sup>2</sup> )	Surface release of Marine Diesel (CS-01) 1.1 (27 hours) days at Dampier Archipelago
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor	Surface release of Marine Diesel (CS-01) 3 m <sup>3</sup> at Dampier Archipelago
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (including those contacted at <100 g/m <sup>2</sup> accumulation concentration)	Surface release of Marine Diesel (CS-01) 156 g/m <sup>2</sup> at Dampier Archipelago
Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb)	1 hour at Montebello Marine Park (CS-02) <sup>4</sup>

From the above deterministic modelling results, the volumes and timeframes have been considered as the basis for response planning and are included in **Section 4.2**. Further stochastic modelling results for the three credible spill scenarios are summarised below.

**CS-01 (outside Mermaid Sound):**

- Surface hydrocarbon concentrations greater than 10 g/m<sup>2</sup> may occur up to 18 km from the release location.
- Floating oil at the 10 g/m<sup>2</sup> threshold is predicted to arrive at the surface waters of the Montebello MP with a probability of 100% after 1 hour, at the Dampier Archipelago receptor with a probability of 2% after 27 hours, at Dampier MP with a probability of 2% after 37 hours and at Gascoyne MP with a probability of 1% after 64 hours.
- Potential for accumulation of oil on shorelines is predicted to be low, with a maximum accumulated volume and concentration of 3 m<sup>3</sup> and 156 g/m<sup>2</sup>, respectively, forecast at the Dampier Archipelago.
- Shorelines accumulation greater than the 100 g/m<sup>2</sup> threshold is predicted to occur at Dampier Archipelago after 2.2 days with a maximum shoreline accumulation of 156 g/m<sup>2</sup>.
- The Dampier Archipelago is predicted to be exposed to entrained hydrocarbons greater than 100 ppb within 14 days.

<sup>4</sup> From stochastic modelling

- No other shoreline location exposed to entrained hydrocarbons greater than 100 ppb over timescales longer than 14 days are predicted to accumulate hydrocarbons >100 g/m<sup>2</sup>.
- Numerous islands, banks, shoals and mainland locations may be exposed to entrained hydrocarbons greater than 100 ppb within 14 days.
- 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.

#### **CS-02 (Within Montebello MP):**

- Surface hydrocarbons greater than the 10 g/m<sup>2</sup> threshold could potentially be found up to 39 km from the spill site. Given that this spill location lies within the Montebello AMP receptor area, floating oil at concentrations equal to or greater than 100 g/m<sup>2</sup> are forecast with a probability of 100%. Probabilities of floating oil contact at the 10 g/m<sup>2</sup> threshold not predicted for other receptors.
- Entrained oil at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to around 630 km from the spill site. The following receptors are predicted to receive entrained oil concentrations at the 100 ppb threshold with probabilities in parenthesis: Montebello Marine Park (78%), Muiron Islands Marine Management Area – World Heritage Area (MMA-WHA, 13%), Argo-Rowley Terrace MP (1%), Barrow Island (5%), Montebello Islands (8%), Ningaloo Coast (Middle, Middle WHA, North, North WHA, max. 12%), Ningaloo RUZ (12%), Pilbara Islands – Southern Island Group (5%), Rankin Bank (1%), Shark Bay (Open Coast and WHA, 1% and 1%, respectively), Bernier & Dorre Islands (1%), Lowendal Islands (1%), Montebello State Marine Park (13%), Muiron Islands (11%), Gascoyne Marine Park (11%) and WA Coastline (10%). The maximum entrained oil concentration is forecast as 156,954 ppb within the Montebello Marine Park.
- Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 216 km from the spill site. Barrow Island (probability 1%), Montebello Islands (probability 1%), Rankin Bank (probability 1%), Montebello Marine Park (probability 49%), Montebello State Marine Park (probability 1%) and the WA Coastline (probability 1%) are receptors predicted to receive dissolved aromatic hydrocarbon concentrations at the 50 ppb threshold. The maximum dissolved aromatic hydrocarbon concentration is forecast as 1990 ppb within the Montebello Marine Park.
- Accumulated hydrocarbons above threshold concentrations ( $\geq 100$  g/m<sup>2</sup>) were not predicted by the modelling to occur.

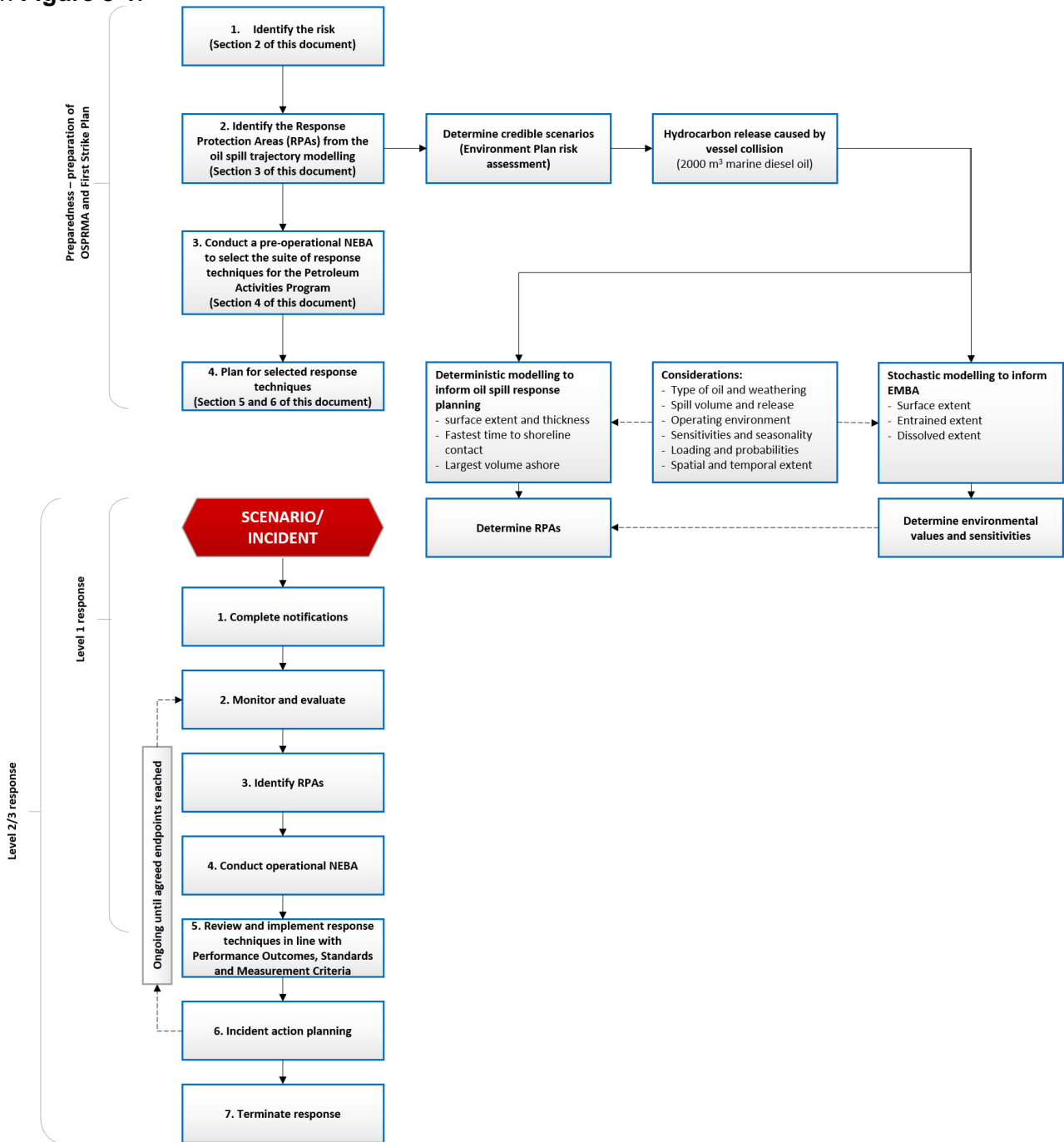
#### **CS-03 (In Scarborough field (FPU location)):**

- Surface hydrocarbons equal to or greater than the 10 g/m<sup>2</sup> threshold could potentially be found up to 113 km from the spill site. No shoreline receptors are predicted to be contacted by surface hydrocarbons concentrations. Floating oil at the 10 g/m<sup>2</sup> threshold is predicted to arrive at the surface waters of the Gascoyne Marine Park receptor with a probability of 1% after 64 hours.
- Entrained oil at concentrations equal to or greater than the 100 ppb threshold is predicted to be found up to around 918 km from the spill site. The Gascoyne Marine Park, Carnarvon Canyon Marine Park and Abrolhos Islands Marine Park receptors are predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 10%, 1% and 1%, respectively. The maximum entrained oil concentration is forecast as 7236 ppb within the Gascoyne Marine Park.
- Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to around 244 km from the spill site. The Gascoyne Marine Park is the only receptor predicted to receive dissolved aromatic hydrocarbon concentrations at the 50 ppb threshold with a probability of 3%. The maximum dissolved aromatic hydrocarbon concentration is forecast as 462 ppb within the Gascoyne Marine Park.

- Accumulated hydrocarbons above threshold concentrations ( $\geq 100 \text{ g/m}^2$ ) were not predicted by the modelling to occur.

### 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 sensitive receptor locations 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 for which a shoreline response could feasibly be conducted (accumulation > 100 g/m<sup>2</sup> for shoreline assessment and/or contact with surface slicks >10 g/m<sup>2</sup> for operational monitoring<sup>5</sup>) have been selected for response planning purposes.

#### 3.2.1 Response Protection Areas (RPAs)

Response Protection Areas (RPAs) have been selected on the basis of their environmental ecological, social, economic, cultural and heritage values and sensitivities and the ability to conduct a response based on the minimum response thresholds (**Section 2.3.3**). It is important to note that the RPAs are determined from the combined results of the individual worst-case runs and do not indicate a single worst case credible scenario (where the timings and volumes are all expected from one release).

The only RPA identified for the PAP is the Dampier Archipelago.

During a spill event, operational monitoring (OM) 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.

<sup>5</sup> 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.

**Table 3-1: Response Protection Areas (RPAs)**

Areas of coastline contacted	Conservation status	IUCN protection category	CS-01		CS-02		CS-03	
			Minimum time to shoreline contact (above 10 g/m <sup>2</sup> ) in days <sup>(6)</sup>	Maximum shoreline accumulation (above 10 g/m <sup>2</sup> ) in m <sup>3</sup> <sup>(7)</sup>	Minimum time to shoreline contact (above 10 g/m <sup>2</sup> ) in days <sup>(5)</sup>	Maximum shoreline accumulation (above 10 g/m <sup>2</sup> ) in m <sup>3</sup> <sup>(6)</sup>	Minimum time to shoreline contact (above 10 g/m <sup>2</sup> ) in days <sup>(5)</sup>	Maximum shoreline accumulation (above 10 g/m <sup>2</sup> ) in m <sup>3</sup> <sup>(6)</sup>
Dampier Archipelago	National Heritage Property	N/A	2.2 days	3 m <sup>3</sup>	No shoreline contact above threshold predicted	No shoreline contact above threshold predicted	No shoreline contact above threshold predicted	No shoreline contact above threshold predicted

<sup>6</sup> This volume and time represent the first time to contact on defined shoreline polygon and the maximum volume ashore for that 24 hour period.

<sup>7</sup> This volume and time represent the maximum volume ashore on defined shoreline polygon for any 24 hour time period

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## 4 NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

A Net Environmental Benefit Analysis (NEBA) is a structured process to consider which response techniques are likely to provide the greatest net environmental benefit. The NEBA process typically involves four key steps outlined in **Figure 4-1**: evaluate data, predict outcomes, balance trade-offs, and select response options. These steps are followed in the planning/preparedness process and would also be followed in a response.

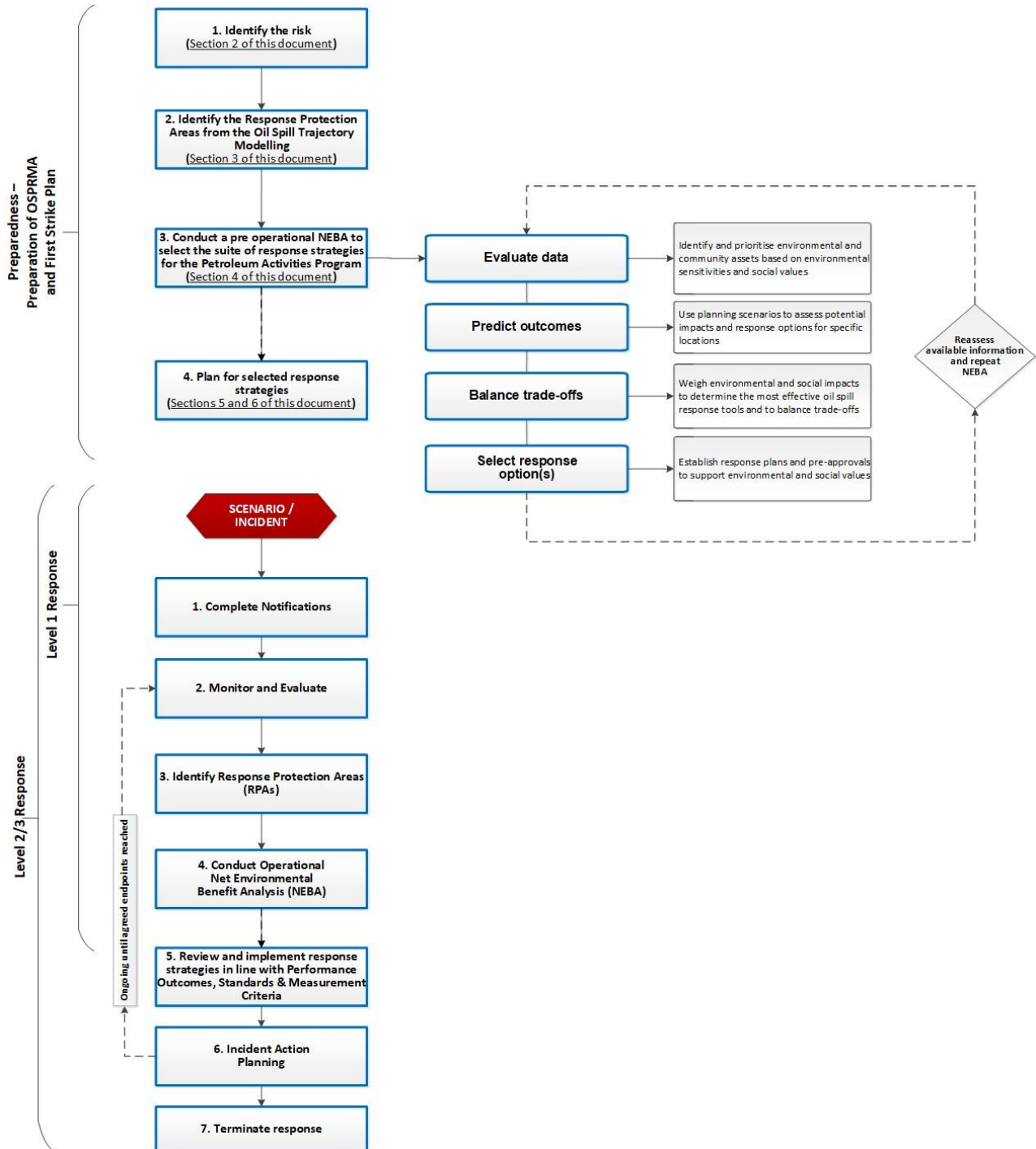


Figure 4-1: Net Environmental Benefit Analysis (NEBA) flowchart

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## 4.1 Pre-operational / Strategic NEBA

The pre-operational NEBA identifies positive and negative impacts to sensitive receptors from implementing the response techniques. Feasibility is considered by assessing the receptors potentially impacted above response thresholds (**Section 2.3.3**) and the surface concentrations (**Section 2.3.4**) from the deterministic modelling.

Completing a pre-operational NEBA is a key response planning control that reduces the environmental risks and impacts of implementing the selected response techniques. The pre-operational NEBA for this PAP is in **ANNEX A: Net Environmental Benefit Analysis** detailed outcomes.

## 4.2 Stage 1: Evaluate data

Woodside identifies and prioritises environmental and community assets based on environmental sensitivities and social values, informed through the use of trajectory modelling. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial area that may be potentially impacted by the PAP activities.

### 4.2.1 Define the scenario(s)

Woodside uses scenarios identified from the risk assessment in the EP to assess potential impacts and response options for specific locations. The WCCS is then selected for deterministic modelling and is used for this pre-operational NEBA. Outlier locations with potential environmental impacts, selected from the stochastic modelling may also be included for assessment. Response thresholds and deterministic modelling are then used to assess the feasibility/effectiveness and scale of the response.

**Table 4-1: Scenario summary information (WCCS, CS-01, CS-02 and CS-03)**

Scenario summary information	
Scenario	Surface release of vessel fuel tank due to a vessel collision
Locations	CS-01: 20° 21' 3.28" S, 116° 42' 5.58" E (outside Mermaid Sound)
	CS-02: 20° 03' 1.44" S, 115° 31' 35.04" E (within Montebello MP)
	CS-03: 19° 53' 54.72" S, 113° 14' 19.56" E (in Scarborough Field, FPU location)
Oil Type	Marine Diesel
Fate and Weathering	Refer to <b>Section 2.2.1</b>
Volume and duration of release	2000 m <sup>3</sup> instantaneous

#### 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.

**Table 4-2: Oil fate, behaviour and impacts**

<b>Deterministic modelling results (CS-01 – outside Mermaid Sound)</b>	
Minimum time to shoreline contact (above 100 g/m <sup>2</sup> )	53 hours (2.2 days) at the Dampier Archipelago
Largest volume ashore at any single RPA (above 100 g/m <sup>2</sup> )	3 m <sup>3</sup> at the Dampier Archipelago
Largest total shoreline accumulation (above 100 g/m <sup>2</sup> )	156 g/m <sup>2</sup> at the Dampier Archipelago
<b>Stochastic modelling results (CS-02 – within Montebello MP)</b>	
Minimum time to shoreline contact (above 100 g/m <sup>2</sup> )	No contact at threshold
Largest volume ashore at any single RPA (above 100 g/m <sup>2</sup> )	No contact at threshold
Largest total shoreline accumulation (above 100 g/m <sup>2</sup> )	No contact at threshold
<b>Stochastic modelling results (CS-03 – Scarborough field, FPU location)</b>	
Minimum time to shoreline contact (above 100 g/m <sup>2</sup> )	No contact at threshold
Largest volume ashore at any single RPA (above 100 g/m <sup>2</sup> )	No contact at threshold
Largest total shoreline accumulation (above 100 g/m <sup>2</sup> )	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 (via vessel SOPEP)
- Containment and recovery
- In situ burning
- Surface dispersant application:
  - aerial dispersant application
  - vessel dispersant application
- 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 4-3**. These options were 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 4-3: Response technique evaluation – Surface Release

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
<b>Hydrocarbon: Marine Diesel</b>				
<b>Monitor and Evaluate</b>	Will be effective in tracking the location of the spill, predicting potential impacts and triggering further monitoring and response techniques as required. Operational monitoring (OM) techniques include: <ul style="list-style-type: none"> <li>OM01 Predictive modelling of hydrocarbons – used throughout release. 'Ground-truthed' using the outputs of all other monitoring techniques.</li> <li>OM02 Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of release.</li> <li>OM03 Monitoring of hydrocarbon presence, properties, behaviour and weathering in water – from outset of release.</li> <li>OM04 Pre-emptive assessment of sensitive receptors at risk – triggered once OM01, OM02 and OM03 inform likely RPAs at risk.</li> <li>OM05 Shoreline assessment – once OM02, OM03 and OM04 inform which RPAs have been impacted.</li> </ul>	Monitoring of a diesel release is a feasible response technique and outputs can be used to guide decision making on the use of other response techniques and providing information to regulatory agencies including AMSA and Western Australia's Department of Transport (WA DoT).	<b>Yes</b>	Monitoring the release will be necessary to: <ul style="list-style-type: none"> <li>Validate trajectory and weathering models</li> <li>Determine the behaviour of the oil in water</li> <li>Determine the location and weathering condition of the slick</li> <li>Provide forecasts of spill trajectory</li> <li>Determine appropriate response techniques</li> <li>Determine effectiveness of response techniques</li> <li>Confirm impact pathways to receptors</li> </ul>
<b>Source Control (via vessel SOPEP)</b>	Controlling the spill of diesel at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	A spill of diesel from a vessel collision will be instantaneous and source control will be limited to what the vessel or facility can achieve whilst responding to the incident.	<b>Yes</b>	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.
<b>Surface Dispersant Application</b>	Dispersants are not considered effective when applied on thin surface films such as diesel. The dispersant droplets tend to pass through the surface films without binding to the hydrocarbon.	Marine diesel has a high portion of non-persistent (light-ends) component and is prone to rapid spreading and evaporation thus the use of dispersant would be deemed an unnecessary response technique.  Furthermore, the volatile nature of Marine Diesel is also likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon thus this response technique is deemed inappropriate.	<b>No</b>	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.
<b>Containment and Recovery</b>	Containment and recovery have 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 at a thickness of 100 g/m <sup>2</sup> (or 0.1 mm) to 200 g/m <sup>2</sup> .	The rate at which diesel would spread in the warm waters off the North West Shelf mean that this strategy would not be feasible.  Furthermore, the volatile nature of Marine Diesel is also likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon thus this response technique is deemed inappropriate.	<b>No</b>	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.
<b>In situ Burning</b>	In situ burning is only effective where minimum slick thickness can be achieved.	Use of in situ burning as a response technique for marine diesel is unfeasible as the minimum slick thickness cannot be attained due to rapid spreading. In addition, there is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which is unlikely to be achieved. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel.	<b>No</b>	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
<b>Hydrocarbon: Marine Diesel</b>				
<b>Mechanical Dispersion</b>	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.	<p>Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly.</p> <p>The volatile nature of the oil is also likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon.</p> <p>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.</p> <p>The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.</p>	<b>No</b>	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.
<b>Shoreline Protection and Deflection</b>	This strategy is deployed at highly sensitive sites to prevent ingress of hydrocarbon or to increase concentrations in an area more suitable for shoreline clean-up.	Given the minimum time to shoreline contact is 2.2 days, use of shoreline protection and deflection for a spill of marine diesel may provide some environmental benefit and could prevent shoreline accumulation occurring (although maximum concentration of shoreline loading is predicted to be 3 m <sup>3</sup> ). Operational monitoring will be deployed from the outset of a spill to track the spill location and fate in real-time. Due to potentially high levels of volatiles from a spill of marine diesel, shoreline protection and deflection would only be undertaken if safe for response personnel.	<b>Yes</b>	<p>Protection and deflection may be deployed to prevent contamination of sensitive resources.</p> <p>RPA's predicted to be contacted are based on modelling outputs and thus may differ under the prevailing conditions of a real event, as the locations of oiling and the volume ashore may vary.</p>
<b>Shoreline Clean up</b>	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m <sup>2</sup> .	Potential for accumulation of oil on shorelines is predicted to be low. This strategy can reduce or prevent impact on sensitive receptors and helps prevent remobilisation of hydrocarbons. Although the concentrations are lower than optimal some shoreline clean-up may be possible at natural collection points on the coastline.	<b>Yes</b>	<p>Shoreline clean-up may be undertaken if sensitive receptors are impacted at levels that would permit an effective response and only if volatile levels are safe for responders.</p> <p>Low concentrations for manual clean up however there may be isolated higher concentrations in sheltered areas that could be manually recovered</p>
<b>Oiled Wildlife</b>	<p>Oiled wildlife response is an effective response technique for reducing the overall impact of a release on wildlife. This is mostly achieved through hazing to prevent additional fauna from being contaminated and through rehabilitation of fauna already subject to contamination.</p> <p>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.</p>	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.	<b>Yes</b>	In the event 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 not feasible for the worst-case scenario for the PAP are detailed in the subsections below and are excluded from further assessment within this document.

#### 4.2.3.1 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.

#### 4.2.3.2 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.

#### 4.2.3.3 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.

### 4.3 Stage 2: Predict outcomes

Woodside uses planning scenarios to assess potential impacts and response options for specific locations. Locations with potential environmental impacts, selected from the stochastic modelling are included for assessment. Response thresholds and deterministic modelling are then used to assess the feasibility/effectiveness of a response.

### 4.4 Stage 3: Balance trade-offs

Woodside considers environmental impacts and response effectiveness/feasibility to determine the most effective oil spill response tools and balance trade-offs, using an automated NEBA tool. The

tool considers potential benefits and impacts associated with a response at sensitive receptors and then considers the effectiveness/feasibility of the response to select the response techniques carried forward to the ALARP assessment. The NEBA can be found in **ANNEX A: Net Environmental Benefit Analysis** detailed outcomes.

#### **4.5 Stage 4: Select best response options**

To select the response technique, all the other stages in the NEBA process are considered and used to establish response plans and any pre-approvals to support protection of identified environmental and social values.

The response techniques implemented may vary according to a particular spill. The hydrocarbon type released and the sensitivities of the receptors (both ecological and socio-economic) may influence the response. The pre-operational NEBA broadly evaluates each response technique and supports decisions on whether they are feasible and of net environmental benefit. Response techniques that are not feasible or beneficial are rejected at this stage and not progressed to planning.

Further risks and impacts from implementing the selected response options are outlined in **Section 7**.

**Table 4-4: Selection and prioritisation of response techniques**

Response planning scenario	Key characteristics for response planning	Feasibility of response techniques									Outline response technique
		Monitor and evaluate	Source control via vessel SOPEP	Surface dispersant application	Mechanical dispersion	In situ burning	Containment and recovery	Shoreline protection and deflection	Shoreline clean-up	Oiled wildlife response	
Release of up to 2000 m <sup>3</sup> marine diesel from a vessel collision (residual component of 100 m <sup>3</sup> )	The shortest timeframe that shoreline contact from floating oil is predicted at >100 g/m is 2.2 days at Dampier Archipelago with shoreline accumulation peaking at approximately 3 m <sup>3</sup> . Other islands, banks, shoals and mainland locations may be exposed to entrained hydrocarbons.	Yes	Yes	No	No	No	No	Yes	Yes	Yes	<ul style="list-style-type: none"> <li>Monitor and evaluate.</li> <li>Initiate vessel source control if safe and feasible.</li> <li>If operational monitoring activities indicate surface hydrocarbons in sufficient concentration are moving toward shorelines, the Protection and Deflection Operational Plan will be used.</li> <li>Shoreline clean-up may be undertaken if sensitive receptors are impacted at levels that would permit an effective response and only if volatile levels are safe for responders.</li> <li>Plan for oiled wildlife response and implement if oiled wildlife is observed.</li> </ul>

From the NEBA undertaken on the WCCS identified the primary response techniques are;

- Monitor and evaluate
- Source control – vessel SOPEP
- Shoreline protection and deflection
- Shoreline clean-up
- Oiled wildlife response

Additional response strategies would be considered based on the inputs and field reports from the monitoring activities. This may include:

- Waste management
- Scientific monitoring programs



## 5 HYDROCARBON SPILL ALARP PROCESS

Woodside's hydrocarbon spill ALARP process is aligned with guidance provided by NOPSEMA in *ALARP Guidance Note N-04300-GN0166 (2022)* and *Guidance Note 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, 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<sup>2</sup>) and available surface hydrocarbon volumes (m<sup>3</sup>) 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, and
  - Predicted effectiveness/feasibility of the control measure.
3. Evaluates the risks and impacts of implementing the proposed response techniques, and any further control measures with associated environmental performance to manage these additional risks and impacts.

Woodside considers the risks and impacts from a hydrocarbon spill to have been reduced to ALARP when:

1. A structured process for identifying and considering alternative, additional, and improved options has been completed for each selected response technique;
2. The analysis of alternate, additional, and improved control measures meets one of the following criteria:
  - All identified, reasonably practicable control measures have been adopted; or
  - No identified reasonably practicable additional, alternative and/or improved control measures would provide further overall increased proportionate environmental benefit; or
  - No reasonably practical additional, alternative, and/or improved control measures have been identified.
3. Where an alternative, additional and/or improved control measure is adopted, a measurable level of environmental performance has been assigned.
4. Higher order impacts/ risks have received more comprehensive alternative, additional, and improved control measure evaluations and do not just compare the cost of the adopted control measures to the costs of an extreme or clearly unreasonable control measure.
5. Cumulative effects have been analysed when considered in combination across the whole activity.

The response technique selection is based on the risk assessment conducted in the EP. The risk assessment identifies the type of oil, volume of release, duration of release, predicted fate, weathering and the EMBA (along with other requirements such as time to impact and predicted volumes ashore). Modelling is then used to inform the NEBA and the prioritisation of suitable response options. The scale of the response techniques selected in the pre-operational NEBA is informed through the assessment of results from deterministic modelling.

For the purpose of the ALARP assessment, the following terms and definitions have been used:

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- Response techniques are considered the control measures that reduce consequences from hydrocarbon spill events. The terms 'response technique' and 'control measure' are used interchangeably.
- Cost is defined as the time, effort and/or trouble taken in financial, safety, design/storage/installation, capital/lease, and/or operations/maintenance terms to adopt a control measure.
- Where the predicted change to environmental impact is compared against standard environmental values and sensitivities impacts using positive or negative criteria from the NEBA Impact Ranking Classification Guidance in Annex A.

## 5.1 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. The table below provides the operations monitoring plans that support the successful execution of this response technique.

**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, Response Protection Areas (RPAs) will be identified and assessed before contact. If shorelines are contacted, a shoreline assessment survey will be completed to guide effective shoreline clean-up operations. This plan includes the process for the IMT to mobilise resources depending on the nature and scale of the spill.

The proximity of Exmouth to the spill event location means that multiple logistical options are available to monitor the spill in relatively short timeframes. The primary mobilisation base for initial monitoring activities would be Exmouth. However, in the event of an extended spill with potential to impact receptors further afield, monitoring activities may also be mobilised from Onslow, Dampier or 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:

- The shortest timeframe for shoreline contact from floating oil is predicted to be 2.2 days at Dampier Archipelago.
- Entrained hydrocarbon concentrations greater than 100 ppb may occur at numerous locations, including islands, banks, shoals or mainland locations, between 1 hour and 34 days following the release.
- 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 5.9)
1	Oil spill trajectory modelling	1.1	Initial modelling available within 6 hours using the Rapid Assessment Tool	1, 3B, 3C, 4
		1.2	Detailed modelling available within 4 hours of RPS receiving information from Woodside	
		1.3	Detailed modelling service available for the duration of the incident upon contract activation	
2	Tracking buoy	2.1	Tracking buoy located on facility/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 common operating picture (COP) daily to improve the accuracy of other monitor and evaluate techniques.	1, 3B, 4
3	Satellite imagery	3.1	Contract in place with 3 <sup>rd</sup> party provider to enable access and analysis of satellite imagery. Imagery source/type requested on activation of service.	1, 3C, 4
		3.2	3 <sup>rd</sup> 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 3 <sup>rd</sup> party provider its acceptance of the proposed acquisition plan.	1
		3.4	3 <sup>rd</sup> 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	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 SCAT and pre-emptive assessments as contingency if required.	1, 2
5	Hydrocarbon detections in water	5.1	Activate 3 <sup>rd</sup> party service provider as per first strike plan. Deploy resources within 2.5 days: <ul style="list-style-type: none"> <li>• 3 specialists in water quality monitoring</li> <li>• 2 monitoring systems and ancillaries</li> <li>• 1 vessel for deploying the monitoring systems with a dedicated winch, A-frame or Hiab and ancillaries to deploy the equipment.</li> </ul>	1, 2, 3C, 3D, 4
		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	6.1	Within 2 days, deployment of 2 specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4

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Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		Performance Standard		Measurement Criteria (Section 5.9)
	of sensitive receptors	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	Shoreline assessment	7.1	Within 2 days, deployment of 2 specialists in SCAT from resource pool for each of the Response Protection Areas (RPAs) with predicted impacts at greater than 100 g/m <sup>2</sup> .	1, 2, 3B, 3C, 4
		7.2	SCAT reports provided to IMT daily detailing the assessed areas to maximise effective utilisation of resources.	1, 3B, 4
		7.3	Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations.	1
8	Management of environmental impact of the response risks	8.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic 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**.
- 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 International Convention for the Prevention of Pollution from Ships (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 International Marine Organisation (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 6.7 of the EP. The vessel master's roles and responsibilities are described in EP Section 7.3.

Performance standards for each contracted PAP vessel are detailed in the vessel's specific SOPEP. These standards ensure sufficient resources are available and are adequately tested to ensure implementation of the SOPEP in the event of a hydrocarbon spill.

### 5.3 Shoreline protection and deflection

The placement of containment, protection or deflection booms on and near a shoreline is a response technique to reduce the potential volume of hydrocarbons contacting or spreading along shorelines, which may reduce the scale of shoreline clean-up. Hydrocarbons contained by the booms would be collected where practicable.

Shorelines would be protected where accessible via vessel or shore. Where hydrocarbon contact has already occurred, there may still be value in deploying protection equipment to limit further accumulations and preventing remobilisation of stranded hydrocarbons.

Shoreline protection and deflection equipment would be mobilised to selected locations, where the following conditions were met:

- Sea-states and hydrocarbon characteristics are safe to deploy protection and deflection measures,
- Oil trajectory has been identified as heading towards identified RPAs.

#### 5.3.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which the response need can be based.

- Floating oil at the 10 g/m<sup>2</sup> threshold is predicted to arrive at the Dampier Archipelago with a probability of 2% after 27 hours (CS-01).
- Shoreline accumulation greater than the 100 g/m<sup>2</sup> threshold is predicted to occur at Dampier Archipelago after a minimum of 2.2 days with a maximum shoreline accumulation of 156 g/m<sup>2</sup> (CS-01).
- Pre-emptive assessment and shoreline assessments (OM04 and OM05) will be mobilised prior to shoreline accumulation at 100 g/m<sup>2</sup>.
- Following pre-emptive assessments of sensitive receptors at risk, and in agreement of prioritisation with WA DoT (if a Level 2/3 incident and within State Waters), protection and deflection operations would commence until agreed termination criteria are reached.
- Shoreline response operations may extend 1-2 weeks following the release based on the predicted time for shoreline contact and the time to complete shoreline clean-up operations.
- Arrangements for support organisations who provide specialist services (trained personnel, protection and deflection equipment) and/or resources and should be tested regularly.
- Tactical Response Plans (TRPs) for Response Protection Areas (RPAs) along with other relevant plans, procedures and support documents need to be in place for Operational and Support functions. These should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for Shoreline Protection and Deflection. These assumptions have been described in the table below.

**Table 5-3: Response Planning Assumptions – Shoreline Protection and Deflection**

Response Planning Assumptions	
<b>Safety considerations</b>	Shoreline protection and deflection operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site. Personnel safety issues may include: <ul style="list-style-type: none"> <li>• hydrocarbon gas and/or liquid exposure</li> <li>• safe for deployment and conditions within range of vessels</li> <li>• high ambient temperatures.</li> </ul>

<b>Shoreline Protection and Deflection</b>	One (1) Shoreline Protection and Deflection operation may include; <ul style="list-style-type: none"><li>• Quantity of shoreline sealing boom (as outlined in TRP)</li><li>• Quantity of fence or curtain boom (as outlined in TRP)</li><li>• 1-2 x trained supervisors</li><li>• 8-10 x personnel / labour hire</li></ul> Specific details of each operation would be tailored to the Tactical Response Plan implemented (where available).
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### 5.3.2 Environmental performance based on need

Table 5-4: Environmental Performance – Shoreline Protection and Deflection

Environmental Performance Outcome		To stop hydrocarbons encountering particularly sensitive areas		
Control measure		Performance Standard		Measurement Criteria (Section 5.9)
9	Response teams	9.1	Relevant Tactical Response Plans (TRPs) will be identified in the first strike plan for activation within 12 hours of the release.	1, 3A, 3C, 4
		9.2	In liaison with WA DoT (for Level 2/3 incidents), mobilise teams to RPAs within 12 hours of operational monitoring predicting impacts. Teams to contaminated RPAs comprised of: <ul style="list-style-type: none"> <li>• 1-2 trained specialists per operation</li> <li>• 8-10 personnel/labour hire</li> </ul> Personnel sourced through resource pool	1, 2, 3B, 3C, 4
		9.3	One operation mobilised within 24 hours to each identified RPA. Expected to be one RPAs within two days (operation as detailed above)	1, 3A, 3B, 4
		9.4	12 trained personnel available within 48 hours sourced through resource pool.	1, 2, 3A, 3B, 3C, 4
		9.5	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B
		9.6	The safety of shoreline response operations will be considered and appropriately managed. During shoreline operations: <ul style="list-style-type: none"> <li>• All personnel in a response will receive an operational/safety briefing before commencing operations</li> <li>• Gas monitoring and site entry protocols will be used to assess safety of an operational area before allowing access to response personnel</li> </ul>	1, 3B, 4
10	Response equipment	10.1	Equipment mobilised from closest stockpile within 12 hours.	1, 3A, 3C, 4
		10.2	Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles within 24 hours.	1, 3C, 3D, 4
		10.3	Supplementary equipment mobilised from OSRL within 48 hours.	
		10.4	Woodside maintains integrated fleet of vessels. Additional vessels can be sourced through existing contracts/frame agreements	1, 3A, 3C, 4
11	Management of Environmental Impact of the response risks	11.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		11.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	

The resulting shoreline protection and deflection capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to shoreline protection and deflection at identified RPAs.

Under optimal conditions, during the subsea and surface releases the capability available exceeds the need identified. It indicates that, the shoreline protection and deflection capability have the following expected performance:

- Deterministic modelling scenarios indicate that first shoreline impact at Dampier Archipelago may occur within 2.2 days for CS-01.
- Existing capability allows for mobilization and deployment of 1 protection and deflection operation (approximately 10-12 responders) within 24 hours (if required). The existing capability is considered sufficient to mobilise and deploy protection at RPAs prior to hydrocarbon contact, guided by the ongoing operational monitoring.

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- The most significant constraint on expanding the scale of response operations is the availability of accommodation and transport services in the region between Exmouth and Port Hedland, and the management of response generated waste. From previous assessment of accommodation in this region, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day for an ongoing operation.
- TRPs have been developed for all identified RPAs excepting international locations.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures (**Section 6.3**).
- 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 timeframe required for deployment of this technique does not justify the excessive costs of identified alternate, improved or additional controls.

## 5.4 Shoreline clean-up

Shoreline clean-up may be undertaken using a broad range of techniques when floating hydrocarbons contact shorelines. The timing, location and extent of shoreline clean-up activities can vary from one scenario to another, depending on the hydrocarbon type, sensitivities and values contacted, shoreline type and access, degree of oiling, and area oiled.

Shoreline clean-up is typically undertaken as a three-phase process, phase one (gross contamination removal) involving the collection of bulk oil, either floating against the shoreline or stranded on it, phase two (moderate to heavy contamination removal) involving removal or in situ treatment of shoreline substrates such as sand or pebble beaches, and phase three (final treatment or polishing) involving removal of the remaining residues of oil. As phase one typically involves recovery of floating and pooled oil, and phase three removes minor volumes, they have not been considered in the assessment of response need for the scenarios identified.

The *Shoreline Clean-up Operational Plan* details the mobilisation and resource requirements for a shoreline clean-up operation including the logistics, support and facility arrangements to manage the movement of personnel and resources. The *Shoreline Cleanup Operational Plan* includes the process for the IMT to mobilise resources depending on the nature and scale of the spill. Woodside would activate and mobilise trained and competent personnel in shoreline assessment before or following shoreline contact at response thresholds.

Shoreline clean-up consists of different manual recovery techniques to remove hydrocarbons and contaminated debris from a shoreline; this is to minimise ongoing environmental contamination and impact. The National Plan also provides guidance on shoreline clean-up techniques as outlined in National Plan Guidance *Response, assessment and termination of cleaning for oil contaminated foreshores* (AMSA 2015).

### 5.4.1 Response need based on predicted consequence parameters

A number of assumptions are required to estimate the response need for shoreline clean-up. These assumptions have been described in the table below.

**Table 5-5: Response Planning Assumptions – Shoreline Clean-up**

Response planning assumptions: Shoreline clean-up	
<b>Manual shoreline clean-up operation (Phase 2)</b>	One, manual shoreline clean-up operation (Phase 2) may include: <ul style="list-style-type: none"> <li>• 1–2 x trained supervisor</li> <li>• 8–10 x personnel/labour hire</li> <li>• Supporting equipment for manual clean-up including rakes, shovels, plastic bags etc.</li> </ul>
<b>Physical properties</b>	<b>Surface Threshold</b> <ul style="list-style-type: none"> <li>• Lower – 100 g/m<sup>2</sup> - 100% coverage of 'stain' – cannot be scratched off easily on coarse sediments or bedrock                             <ul style="list-style-type: none"> <li>- Expected trigger to undertake detailed shoreline survey</li> </ul> </li> <li>• Optimum – 250 g/m<sup>2</sup> – 25% coverage of 'coat' – can be scratched off with a fingernail on coarse sediments                             <ul style="list-style-type: none"> <li>- Expected trigger to commence clean-up operations</li> </ul> </li> </ul>
<b>Efficiency (m<sup>3</sup> oil recovered per person per day)</b>	Manual shoreline clean-up (Phase 2) - approx. 0.25–1 m <sup>3</sup> oil recovered per person per 10 hr day is based on moderate to high coverage of oil (100 g/m <sup>2</sup> –1000 g/m <sup>2</sup> ) with manual removal using shovels/rakes, etc. from studies of previous response operations and exercises
<b>Field operation supervisors required (per team)</b>	Manual shoreline clean-up (Phase 2) – 1-2 trained supervisor(s) per operation (assumes one team per operation)
<b>Personnel/ labour hire (per team)</b>	Manual shoreline clean-up (Phase 2) – 8-10 personnel/labour hire per operation (assumes one team per operation)

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- The shortest timeframe that shoreline contact from floating oil is predicted is 2.2 days at Dampier Archipelago with shoreline accumulation peaking at approximately 3 m<sup>3</sup>.
- Pre-emptive assessment and shoreline assessments (OM04 and OM05) will be mobilised prior to shoreline contact.
- Following Shoreline Assessment and agreement of prioritisation with WA Department of Transport, clean-up operations would commence until agreed termination criteria are reached.
- Arrangements for support organisations who provide specialist services (trained personnel, labour hire, shoreline clean-up, and site management equipment) and/or resources and should be tested regularly.
- Tactical Response Plans ([TRPs](#)) for Response Protection Areas (RPAs) along with other relevant plans, procedures and support documents should be in developed and in place for Operational and Support functions. These should be reviewed and updated regularly.

In addition, a number of assumptions are required to estimate the response need for shoreline clean-up. These assumptions have been described in the table below.

**Table 5-6: Shoreline Clean-up techniques and recommendations**

Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Natural recovery	Allowing shoreline to self-clean; no intervention undertaken.	<p>Remote and inaccessible shorelines for personnel, vehicles and machinery.</p> <p>Other clean-up techniques may cause more damage than allowing the shoreline to naturally recover.</p> <p>Natural recovery may be recommended for areas with mangroves and coral reefs due to their sensitivity to disturbance from other shoreline clean-up techniques.</p> <p>High-energy shorelines: where natural removal rates are high, and hydrocarbons will be removed over a short timeframe.</p>	<p>Low-energy shorelines: these areas tend to be where hydrocarbon accumulates and penetrates soil and substrates.</p>	<p>May be employed, if the operational NEBA identifies that other clean-up techniques will have a negligible or negative environmental impact on the shoreline.</p> <p>May also be used for buried or reworked hydrocarbons where other techniques may not recover these.</p>
Manual recovery	<p>Use of manpower to collect hydrocarbons from the shoreline.</p> <p>Use of this form of clean-up is based on type of shoreline.</p>	<p>Remote and inaccessible shorelines for vehicles and machinery.</p> <p>Areas where shorelines may not be accessible by vehicles or machinery and personnel can recover hydrocarbons manually.</p> <p>Where hydrocarbons have formed semi-solid to solid masses that can be picked up manually.</p> <p>Areas where nesting and breeding fauna cannot or should not be disturbed.</p>	<p>Coral reef or other sensitive intertidal habitats, as the presence of a response may cause more environmental damage than allowing them to recover naturally.</p> <p>For some high-energy shorelines such as cliffs and sea walls, manual recovery may not be recommended as it may pose a safety threat to responders.</p>	<p>May be used for sandy shorelines. Buried hydrocarbons may be recovered using shovels into small carry waste bags, but where possible the shoreline should be left to naturally recover to prevent any further burying of hydrocarbons (from general clean-up activities).</p>

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Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Sorbents	Sorbent boom or pads used to recover fluid or sticky hydrocarbons. Can also be used after manual clean-up to remove any residues from crevices or from vegetation.	<p>When hydrocarbons are free-floating close to shore or stranded onshore.</p> <p>As a secondary treatment method after hydrocarbon removal and in sensitive areas where access is restricted.</p>	<p>Access for deploying and retrieving sorbents should not be through soft or sensitive habitats or affect wildlife.</p>	<p>Used for rocky shorelines.</p> <p>Sorbent boom will allow for deployment from small shallow draught vessels, which will allow deployment close to shore where water is sheltered and to aid recovery.</p> <p>Sorbents will create more solid waste compared with manual clean-up, so will be limited to clean rocky shorelines.</p>
Vacuum recovery, flushing, washing	The use of high volumes of low-pressure water, pumping and/or vacuuming to remove floating hydrocarbons accumulated at shorelines.	<p>Suited to rocky or pebble shores where flushing can remobilise hydrocarbons (to be broken up) and aid natural recovery.</p> <p>Any accessible shoreline type from land or water. May be mounted on barges for water-based operations, on trucks driven to the recovery area, or hand-carried to remote sites.</p> <p>Flushing and vacuum may be useful for rocky substrate.</p> <p>Medium- to high-energy shorelines where natural removal rates are moderate to high.</p> <p>Where flushed hydrocarbons can be recovered to prevent further oiling of shorelines.</p>	<p>Areas of pooled light, fresh hydrocarbons may not be recoverable via vacuum due to fire and explosion risks.</p> <p>Shorelines with limited access.</p> <p>Flushing and washing not recommended for loose sediments.</p> <p>High-energy shorelines where access is restricted.</p>	<p>High volume low pressure (HVLP) flushing and washing into a sorbent boom could be used for rocky substrate, if protection booming has been unsuccessful in deflecting hydrocarbons from these areas.</p>

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Technique	Description	Shoreline type		Application
		Recommended	Not recommended	
Sediment reworking	Movement of sediment to surf to allow hydrocarbons to be removed from the sediment and move sand via heavy machinery.	When hydrocarbons have penetrated below the surface. Recommended for pebble/cobble shoreline types. Medium- to high-energy shorelines where natural removal rates are moderate to high.	Low-energy shorelines as the movement of substrate will not accelerate the natural cleaning process. Areas used by fauna which could potentially be affected by remobilised hydrocarbons.	Use of wave action to clean sediment: appropriate for sandy beaches where light machinery is accessible.
Vegetation cutting	Cutting vegetation to prevent oiling and reduce volume of waste and debris.	Vegetation cutting may be recommended to reduce the potential for wildlife being oiled and reduce oiled waste before contact. Where oiling is restricted to fringing vegetation.	Access in bird-nesting areas should be restricted during nesting seasons. Areas of slow-growing vegetation.	May be used on shorelines where vegetation can be safely cleared to reduce oiling.
Cleaning agents (OSCA)	Application of chemicals such as dispersants to remove hydrocarbons.	May be used for manmade structures and where public safety may be a concern.	Natural substrates and in low-energy environments where sufficient mixing energy is not present.	Not recommended for shorelines. Could be used for manmade structures such as boat ramps.

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### 5.4.2 Environmental performance based on need

Table 5-7: Environmental Performance – Shoreline Clean-up

Environmental Performance Outcome		To remove bulk and stranded hydrocarbons from shorelines and facilitate shoreline amenity habitat recovery.		
Control measure		Performance Standard		Measurement Criteria (Section 5.9)
12	Shoreline responders	12.1	In liaison with WA DoT (for Level 2/3 incidents), deployment of one shoreline clean-up team to each contaminated RPA comprised of: <ul style="list-style-type: none"> <li>• 1-2 trained specialists per operation</li> <li>• 8-10 personnel/labour hire</li> </ul> Personnel sourced through resource pool within 48 hours of request from the IMT.	1, 2, 3A, 3B, 3C, 4
		12.2	Relevant Tactical Response Plans (TRPs) will be identified in the first strike plan for activation within 12 hours of the release	1, 3A, 3C, 4
		12.3	Clean-up operations for shorelines in line with results and recommendations from SCAT outputs	1, 3A, 3B
		12.4	All shoreline clean-up sites will be zoned and marked before clean-up operations commence.	
		12.5	In liaison with WA DoT (for Level 2/3 incidents), mobilise and deploy one shoreline clean-up operation where operational monitoring predicts accumulations >100 g/m <sup>2</sup> by Day 2.	1, 2, 3A, 3C, 4
		12.6	The safety of shoreline response operations will be considered and appropriately managed. During shoreline clean-up operations: <ul style="list-style-type: none"> <li>• All personnel in a response will receive an operational/safety briefing before commencing operations</li> <li>• Gas monitoring and site entry protocols will be used to assess safety of an operational area before allowing access to response personnel</li> </ul>	1, 3B, 4
		12.7	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B
13	Shoreline clean-up equipment	13.1	Contract in place with 3 <sup>rd</sup> party providers to access equipment.	1, 3A, 3C, 4
		13.2	Equipment mobilised from closest stockpile within 24 hours.	
		13.3	Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles within 2 days, if required.	1, 3C, 3D, 4
		13.4	Supplementary equipment mobilised from OSRL within 5 days, if required.	
14	Management of Environmental Impact of the response risks	14.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified	1
		14.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	
		14.3	Vehicular access will be restricted on dunes, turtle nesting beaches and in mangroves	
		14.4	Removal of vegetation will be limited to moderately or heavily oiled vegetation	
		14.5	Shoreline access routes with the least environmental impact identified will be selected by a specialist in SCAT operations	
		14.6	Oversight by trained personnel who are aware of the risks	
		14.7	Trained unit leader's brief personnel of the risks prior to operations	

The resulting shoreline clean-up capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to shoreline clean-up at identified RPAs. Woodside's capability can cover all required shoreline clean-up operations for the PAP. Whilst modelling predicts shoreline contact from day 2 at Dampier Archipelago Woodside is satisfied that the current capability is managing risks and impacts to ALARP.

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The capability available meets the need identified for this activity. The shoreline clean-up capability has the following expected performance (if required during a response):

- Woodside has the capacity to mobilise and deploy up to 1-2 shoreline clean-up teams (approx. 10-20 responders) by Day 2 using existing labour hire contracts with Woodside, AMOSC, Core Group, AMSA, WA DoT and OSRL team leads.
- Pre-emptive assessment and shoreline assessments (OM04 and OM05) will be mobilised prior to shoreline contact to determine if shoreline clean-up is feasible and necessary.
- Assessment of response capability indicates that for a worst-case scenario the actual teams required would meet the available capability.
- Woodside has considered deployment of additional personnel to undertake shoreline clean-up operations but is satisfied that the identified level of resource is balanced between cost, time and effectiveness. The most significant constraint on expanding the scale of response operations is accommodation and transport of personnel in Exmouth and management of response generated waste. From previous assessment of accommodation in Exmouth, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day for an ongoing operation, which exceeds the number of personnel that would be required.
- TRPs have been developed for all identified RPAs.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures (**Section 6.3**).
- 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 limited scale and timeframe for deployment of this technique does not justify the excessive costs of identified alternate, improved or additional controls.

## 5.5 Oiled wildlife response (including hazing)

Woodside would implement a response in accordance with the Western Australian *Oiled Wildlife Operational Plan* (WA OWRP). This 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 Western Australia Department of Biodiversity, Conservation and Attractions (DBCA).

Oiled wildlife response is undertaken in accordance with the (WA OWRP) to ensure it is conducted in accordance with legislative requirements under the Animal Welfare Act 2002.

If there is a net environmental benefit, oiled wildlife operations will be conducted 24 hours per day to reduce the time for rehabilitation and release of oiled wildlife. Hazing and pre-emptive capture techniques to keep non-oiled animals away from contaminated habitat in instances where it is deemed appropriate will be conducted in accordance with the (WA OWRP), specifically vessels used in hazing/pre-emptive capture will approach fauna at slow speeds to ensure animals are not directed towards the oil and deterrence/hazing and pre-emptive capture will only be conducted if Woodside has licensed authority from DBCA and approval from the Incident Controller.

Shoreline access will be considered as part of the operational NEBA. Vehicle access would be restricted on dunes, turtle nesting beaches and in mangroves. Woodside retains specialist personnel to support and manage oiled wildlife operations, including trained and competent responders in Exmouth or the wider region. Additional personnel would be sourced through Woodside's arrangements to support an oiled wildlife response as required.

### 5.5.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- Modelling predicts the shortest time to shoreline contact at day 2 at Dampier Archipelago.
- The offshore location of the release site is expected to initially result in low numbers of at-risk or impacted wildlife.
- As the surface oil approaches shorelines, potential for oiled wildlife impacts are likely to increase.
- It is estimated that an oiled wildlife response would be between Level 2 and 3, as defined in the WA OWRP.

**Table 5-8: Key at-risk species potentially in Priority Protection Areas and open ocean**

Species	Open ocean	Dampier Archipelago	Montebello AMP	Gascoyne AMP	Dampier 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	✓	✓	✓	✓	✓
Dugongs	✓	✓			✓
Sea snakes	✓	✓	✓	✓	✓

The oiled wildlife response technique targets key wildlife populations at risk within Commonwealth open waters and the nearshore waters. Responding to oiled wildlife consists of eight key stages, as described in **Table 5-9** below.

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**Table 5-9: Oiled wildlife response stages**

Stage	Description
Stage 1: Wildlife first strike response	Gather situational awareness including potential wildlife assets at risk.
Stage 2: Mobilisation of wildlife resources	Resources include personnel, equipment and facilities.
Stage 3: Wildlife reconnaissance	Reconnaissance to identify potentially affected animals.
Stage 4: IAP wildlife sub-plan development	The IAP includes the appropriate response options for oiled wildlife, including wildlife priorities for protection from oiling; deterrence measures (see below); and recovery and treatment of oiled wildlife; resourcing of equipment and personnel.  It includes consideration of deterrence practices such as 'hazing' to prevent fauna from entering areas potentially contaminated by spilled hydrocarbons, as well as dispersing, displacing or relocating fauna to minimise/prevent contact and provide time for clean-up.
Stage 5: Wildlife rescue and staging	This includes the different roles of finding oiled wildlife, capturing wildlife, and holding and/or transportation of wildlife to oiled wildlife facilities.
Stage 6: Establishment of an oiled wildlife facility	Treatment facilities would be required for the first-aid, cleaning and rehabilitation of affected animals.  A vessel-based 'on-water' facility would likely need to be established to enable stabilisation of oiled wildlife before transport to a suitable treatment facility.  Suitable staging sites in Exmouth and/or Onslow have been identified in the draft Regional Oiled Wildlife Response Operational Plan (OWROP), should a land-based site be required.
Stage 7: Wildlife rehabilitation	Considerations include a suitable rehabilitation centre and personnel, wildlife housing, record keeping and success tracking.
Stage 8: Oiled wildlife response termination	Once a decision has been made to terminate operations, the Incident Controller will stand down individual participating and supporting agencies.

Reconnaissance and primary response would be done during operational monitoring and surveillance activities. Where marine fauna is observed on water or transiting near or within the spill area, observations would be recorded through surveillance records. The shoreline assessments would be done in accordance with OM05, which would be used as a further tool to identify fauna and habitats contacted by hydrocarbons.

Staging sites would be established as forward bases for shoreline- or vessel-based field teams. Once recovered to a staging site, wildlife would be transported to the designated oiled wildlife facility or a temporary holding centre (before being transported to the oiled wildlife facility). Temporary holding centres are required when there is significant distance between a staging site and the oiled wildlife facility, to enable stabilisation of oiled animals. The oiled wildlife facility is the primary location where animals would be housed and treated. Sites proposed for staging a regional oiled wildlife response in Exmouth and/or Onslow have been identified.

To deploy a response appropriate to the nature and scale of the event, as well as scalable over time, Woodside would implement an oiled wildlife response in consultation with DBCA and use the capability outlined in the WA OWRP, with additional capability if required (e.g. volunteers) accessible through Woodside's *People & Global Capability Surge Labour Requirement Plan*.

The WA OWRP provides indicative oiled wildlife response levels (**Table 5-10**) and the resources likely to be needed at each increasing level of response.

**Table 5-10: Indicative oiled wildlife response (OWR) level (adapted from the WA OWRP, 2014)**

OWR Level	Indicative personnel numbers	Indicative duration	Indicative number of birds (non-threatened species)	Indicative number of birds (threatened species)	Turtles (hatchlings, juveniles, adults)	Cetaceans	Pinnipeds	Dugongs
Level 1	6	< 3 days	1–2/day < 5 total	None	None	None	None	None
Level 2	26	> 4–14 days	1–5/day < 20 total	None	< 20 hatchlings No juv/adults	None	None	None
Level 3	59	> 4–14 days	5–10/day	1–5/day < 10 total	< 5 juv/adults < 50 hatchlings	None	< 5	None
Level 4	77	> 4–14 days	5–10/day < 200 total	5–10/day	< 20 juv/adults < 500 hatchlings	< 5, or known habitats affected	5–50	Habitat affected only
Level 5	116	> 4–14 days	10–100/day > 200 total	10–50/day	> 20 juv/adults > 500 hatchlings	< 5 dolphins	> 50	Dugongs oiled
Level 6	122	> 4–14 days	> 100/day	10–50/day	> 20 juv/adults > 500 hatchlings	> 5 dolphins	> 50	Dugongs oiled

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### 5.5.2 Environmental performance based on need

**Table 5-11: Environmental Performance – Oiled Wildlife Response**

Environmental Performance Outcome		Oiled Wildlife Response is conducted in accordance with the Western Australian Oiled Wildlife Response Plan (WAOWRP) to ensure it is conducted in accordance with legislative requirements to house, release or euthanise fauna under the Animal Welfare Act 2002.		
Control measure		Performance Standard		Measurement Criteria (Section 5.9)
15	Wildlife response equipment	15.1	Contracted capability to treat 100 individual fauna for immediate mobilisation to Response Priority Areas (RPAs)	1, 3A, 3B, 3C, 4
		15.2	Contracted capability to treat up to an additional 250 individual fauna within a five-day period.	
		15.3	National plan access to additional resources under the guidance of the DoT (up to a Level 5 oiled wildlife response as specified in the OWRP), with the ability to treat about 600 individual fauna by the time hydrocarbons contact the shoreline.	1, 3C, 4
		15.4	Vessels used in hazing/pre-emptive capture will approach fauna at slow speeds to ensure animals are not directed towards the hydrocarbons.	1, 3A, 3B, 4
		15.5	Facilities for the rehabilitation of oiled wildlife are operational 24/7 as per WAOWRP.	1, 3A, 4
16	Wildlife responders	16.1	2 OWR Team Members to lead the oiled wildlife operations who have completed an Oiled Wildlife Response Management course	1, 2, 3B
		16.2	Wildlife responders to be accessed through resource pool and additional agreements with specialist providers	1, 2, 3A, 3B, 3C, 4
		16.3	Operations conducted with advice from the DBCA Oiled Wildlife Advisor and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan	1
		16.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B

The resulting wildlife response capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to response at identified RPAs.

Wildlife collection operations would be expected to peak between Day 3 and Day 14 and decrease thereafter. Additional personnel are unlikely to increase the net environmental benefit and this capability is considered to be a manageable balance between effectiveness and minimising environmental impact.

Under optimal conditions, during the surface release the capability available meets the need identified. It indicates that, the wildlife response capability has the following expected performance:

- Mobilisation and deployment of approximately 1-2 wildlife collection teams within the first 5 days of the incident
- Mobilisation and deployment of 1-2 central wildlife treatment and rehabilitation locations at Exmouth and/or Onslow in accordance with WA OWRP.

Woodside would establish a wildlife collection point at the RPA for identified oiled wildlife collection and sorting. From these locations, recovered wildlife would be transported to a central treatment location at Exmouth and/or Onslow.

## 5.6 Waste Management

Waste management is considered a support technique to wildlife response and shoreline clean-up. Waste generated and collected during the response that will require handling, management and disposal may consist of:

- Liquids (hydrocarbons and contaminated liquids) collected during shoreline clean-up and wildlife response; and/or
- Solids/semi-solids (oily solids, garbage, contaminated materials) and debris (e.g. seaweed, sand, woods, and plastics) collected during shoreline clean-up and wildlife response.

Expected waste volumes during an event are likely to vary depending on oil type, volume released, response techniques employed and how weathering of hydrocarbons. Waste management, handling and capacity should be scalable to 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
- banded 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.

### 5.6.1 Response need based on predicted consequence parameters

Table 5-12: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
<b>Waste loading per m<sup>3</sup> oil recovered (multiplier)</b>	Shoreline clean-up (manual) – approx. 5-10x multiplier for oily solid and liquid wastes generated by manual clean-up
	Oiled wildlife response – approx. 1m <sup>3</sup> of oily liquid waste generated for each wildlife unit cleaned

### 5.6.2 Environmental performance based on need

Table 5-13: Environmental Performance – Waste Management

Environmental Performance Outcome		To minimise further impacts, waste will be managed, tracked and disposed of in accordance with laws and regulations.		
Control measure		Performance Standard		Measurement Criteria (Section 5.9)
17	Waste Management	17.1	Contract with waste management services for transport, removal, treatment and disposal of waste	1, 3A, 3B, 3C, 4
		17.2	Access to at least 213 m <sup>3</sup> of solid and liquid waste storage available within 2 days upon activation of 3 <sup>rd</sup> party contract.	
		17.3	Access to up to 675 m <sup>3</sup> by day 4.	
		17.4	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		17.5	Response teams will segregate liquid and solid wastes at the earliest opportunity.	
		17.6	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	1, 3A, 3B
		17.7	Open communication line to be maintained between IMT and waste management services to ensure the reliable flow of accurate information between parties.	
		17.8	Waste management to be conducted in accordance with Australian laws and regulations	1, 3A, 3B, 3C, 4
		17.9	Waste management services available and employed during response	

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management at identified RPAs.

It indicates 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.

## 5.7 Scientific monitoring

A scientific monitoring program (SMP) would be activated following a Level two or three 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 or other identified unplanned hydrocarbon releases associated with the operational activities (refer to **Table 2-1**).

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 socio-cultural EMBA based on exceedance of environmental and social-cultural hydrocarbon threshold concentrations (refer to **Table 2-2** and see Section 4 and 6 of the Scarborough Seabed Intervention and Trunkline Installation activity EP for further information on applicable thresholds and the EMBA). The PAP credible spill scenarios (CS-01, CS-02 and CS-03) defines the combined EMBA which is the basis of the SMP approach presented in this section.

It should be noted the resulting SMP receptor locations differ from the Response Protection Areas presented and discussed in **Section 3** of this document due to the applicability of different hydrocarbon threshold levels. The SMP would be informed by the data collected via the operational monitoring program (OMP) studies; however, it differs from the OMP in being a long-term program independent of, and not directing, the operational oil spill response or monitoring of impacts from response activities (refer to **Section 5.1** for operational monitoring overview).

Key objectives of the Woodside oil spill SMP are:

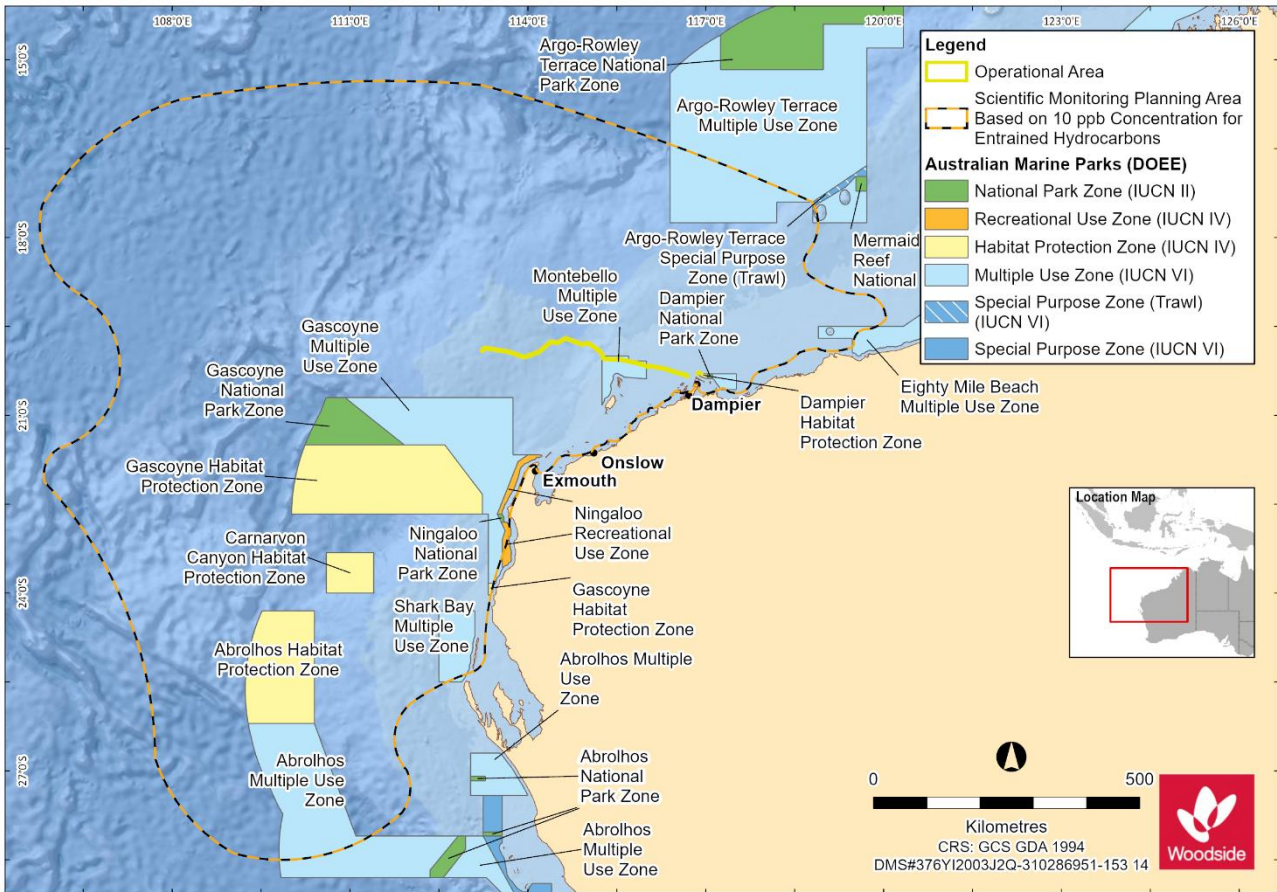
- Assess the extent, severity and persistence of the environmental impacts from the spill event.
- Monitor subsequent recovery of impacted key species, habitats and ecosystems.

The SMP comprises ten targeted environmental monitoring programs to assess the condition of a range of physico-chemical (water and sediment) and biological (species and habitats) receptors including EPBC Act listed species, environmental values associated with protected areas and socio-economic values, such as fisheries. The ten SMPs are as follows:

- SM01 – Assessment of the presence, quantity and character of hydrocarbons in marine waters (linked to OM01 to OM03)
- SM02 – Assessment of the presence, quantity and character of hydrocarbons in marine sediments (linked to OM01 and OM05)
- SM03 – Assessment of impacts and recovery of subtidal and intertidal benthos
- SM04 – Assessment of impacts and recovery of mangroves/saltmarsh habitat
- SM05 – Assessment of impacts and recovery of seabird and shorebird populations
- SM06 – Assessment of impacts and recovery of nesting marine turtle populations
- SM07 – Assessment of impacts to pinniped colonies including haul-out site populations
- SM08 – Desktop assessment of impacts to other non-avian marine megafauna
- SM09 – Assessment of impacts and recovery of marine fish (linked to SM03)
- SM10 – Assessment of physiological impacts to important fish and shellfish species (fish health and seafood quality/safety) and recovery.

These SMPs have been designed to cover all key tropical and temperate habitats and species within Australian waters and broader, if required. A planning area for scientific monitoring is also identified to acknowledge potential hydrocarbon contact below the environmental threshold concentrations and beyond the EMBA. This planning area has been set with reference to the entrained low exposure value of 10 ppb detailed in NOPSEMA Bulletin #1 Oil Spill Modelling (2019), as shown in **Figure 5-1**.





**Figure 5-1: The planning area for scientific monitoring based on the area potentially contacted by the low (below ecological impact) entrained hydrocarbon threshold of 10 ppb representing the EMBA for the combined marine diesel credible spill scenarios (CS-01, CS-02 and CS-03)**

Please note that **Figure 5-1** represents the overall combined extent of the marine diesel spill model outputs for the credible scenarios (CS-01, CS-02 and CS-03), based on a total of 100-200 replicate simulations over an annual period, and therefore represents the largest spatial boundaries of the spill combinations, not the spatial extent of a single spill.

### 5.7.1 Scientific monitoring deployment considerations

Table 5-14: Scientific monitoring deployment considerations

Scientific Monitoring Deployment Considerations	
Existing baseline studies for sensitive receptor locations predicted to be affected by a spill	<p>PBAs of the following two categories:</p> <ul style="list-style-type: none"> <li>• PBAs within the predicted &lt;10-day hydrocarbon contact time prediction: As part of this assessment, a desktop review was conducted of available and appropriate baseline data for key receptors for locations (if any) that are potentially impacted within 10 days of a spill (based on the EMBA). Furthermore, the need to conduct baseline data collection to address data gaps and demonstrate spill response preparedness is assessed (refer to Annex D). In the scenario, that baseline data needs are identified, planning for baseline data acquisition is typically commenced pre-PAP and the execution of studies undertaken considers the receptor type, seasonality and temporal assessment requirements and location conditions.</li> <li>• PBAs predicted &gt;10 days to hydrocarbon contact: As part of this assessment, a desktop review is conducted of available and appropriate baseline data for key receptors for locations (if any) that are potentially impacted &gt;10 days' time of a hydrocarbon spill event and documented (refer to <b>Table 5-15</b>). In the event of a spill, the SMP activation (as per the Scarborough Seabed Intervention and Trunkline Installation activity First Strike Response Plan) directs the SMP team to follow the steps outlined in the SMP Operational Plan. The steps include: the review of availability and type of existing baseline data, with particular reference to any Pre-emptive Baseline Areas (PBAs) identified as &gt;10 days to hydrocarbon contact as predicted by forecast modelling trajectories. 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.</li> </ul>
Pre-emptive Baseline in the event of a spill	Activation of SMPs in order to collect baseline data at sensitive receptor locations with predicted hydrocarbon contact time > 10 days (as documented in <b>ANNEX C: Oil Spill Scientific monitoring Program</b> ).
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	<p>The following met-ocean conditions have been identified to implement SMPs:</p> <ul style="list-style-type: none"> <li>• Waves &lt; 1 m for nearshore systems</li> <li>• Waves &lt; 1.5 m for offshore systems</li> <li>• Winds &lt; 20 knots</li> <li>• Daylight operations only.</li> </ul> <p>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.</p>

### 5.7.2 Response planning assumptions

Table 5-15: Scientific monitoring response planning assumptions

Response Planning Assumptions	
PBAs	<p>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:</p> <ul style="list-style-type: none"> <li>• PBAs for which baseline data are planned for and data collection may commence pre-PAP (<math>\leq 10</math> days minimum time to contact), where identified as a gap.</li> <li>• PBAs (<math>&gt; 10</math> days minimum time to contact) for which baseline data may be collected in the event of an unplanned hydrocarbon release. Response phase PBAs are prioritised for SMP activities due to vulnerability (i.e. time to contact and environmental sensitivity) to potential impacts from hydrocarbon contact and an identified need to acquire baseline data.</li> </ul> <p>Time to hydrocarbon contact of <math>&gt; 10</math> 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 Scarborough Seabed Intervention and Trunkline Installation activity.</p> <p>PBAs for Scarborough Seabed Intervention and Trunkline Installation activity are identified and listed in <b>ANNEX D: Monitoring Program and Baseline Studies for the Petroleum Activities Program, Table D-1</b>. The PBAs together with the situational awareness (from the operational monitoring) are the basis for the response phase SMP planning and implementation.</p>
Pre-Spill	<p>A review of existing baseline data for receptor locations with potential to be contacted by floating or entrained hydrocarbons at environmental thresholds within <math>\leq 10</math> days has identified the following based on the combined EMBA for the credible spill scenarios (CS-01, CS-02 and CS-03):</p> <ul style="list-style-type: none"> <li>• Rankin Bank <sup>8</sup></li> <li>• Dampier Archipelago</li> <li>• Montebello Islands and Montebello State Marine Park</li> <li>• Barrow Island and the Lowendal Islands</li> <li>• Pilbara Islands – Middle and Southern Island Groups</li> <li>• Ningaloo coast and the Muiron Islands (state marine park, AMP and WHA)</li> </ul> <p>Australian Marine Parks (AMPs) potentially affected include:</p> <ul style="list-style-type: none"> <li>• Dampier AMP</li> <li>• Montebello AMP</li> <li>• Gascoyne AMP</li> </ul> <p>Note: The Australian Marine Parks (AMPs) are located in offshore, open waters where hydrocarbon exposure is possible on surface waters and in the upper water column (entrained hydrocarbons), only.</p>

<sup>8</sup> Floating oil will contact submerged features in open ocean locations; therefore, only entrained hydrocarbon contact is predicted at  $\leq 10$  days. Predicted upper water column entrained hydrocarbons may extend to approximately 20 m depth and contact the submerged shoal benthic communities.

Response Planning Assumptions	
In the Event of a Spill	<p>Receptor locations with &gt; 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 Incident Control Centre (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 <b>ANNEX D: Monitoring Program and Baseline Studies for the Petroleum Activities Program</b>, based on the PAP credible spill scenarios (CS-01, CS-02 and CS-03) (<b>Table 2-1</b>).</p> <p>To address the initial focus in a response phase SMP planning situation, receptor locations predicted to be contacted between &gt; 10 days have been identified as follows:</p> <ul style="list-style-type: none"> <li>• Glomar Shoal<sup>9</sup></li> <li>• Pilbara Islands – Northern Island Group</li> <li>• Shark Bay outer barrier islands (Bernier and Dorre)</li> <li>• Argo-Rowley Terrace AMP</li> <li>• Shark Bay AMP</li> <li>• Abrolhos AMP</li> </ul> <p>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 <b>ANNEX C: Oil Spill Scientific monitoring Program</b> for further details on the process for 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.</p> <p>In the event key receptors within geographic locations that are potentially impacted after ten 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:</p> <ol style="list-style-type: none"> <li>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 (&gt;10 days which is sufficient time to mobilise SMP teams and acquire data before hydrocarbon contact). With reference to the Scarborough Seabed Intervention and Trunkline Installation activity, dependent on the location of the hydrocarbon release, priority would be focused on Dampier Archipelago, Montebello, Barrow and Lowendal Island Groups, Ningaloo Coast and the Muiron Islands.</li> <li>ii. Highly sensitive and/or valued habitats and communities in coastal waters will be prioritised for pre-emptive baseline surveys over open water areas of AMPs, such as Dampier and Montebello AMPs.</li> <li>iii. 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.</li> </ol>

<sup>9</sup> Floating oil will contact submerged features in open ocean locations; therefore, only entrained hydrocarbon contact is predicted at ≤ 10 days. Predicted upper water column entrained hydrocarbons may extend to approximately 20 m depth and contact the submerged shoal benthic communities.

Response Planning Assumptions	
Baseline Data	<ul style="list-style-type: none"> <li>A summary of the spill affected area and receptor locations as defined by the combined EMBA for the PAP credible spill scenarios (CS-01, CS-02 and CS-03), presented in the Scarborough Seabed Intervention and Trunkline Installation activity EP (Section 6).</li> <li>The key receptors at risk by location and corresponding SMPs based on the EMBA for the PAP are presented in <b>ANNEX D: Monitoring Program and Baseline Studies for the Petroleum Activities Program</b>, as per the PAP credible spill scenarios. This matrix maps the receptors at risk with their location and the applicable SMPs that may be triggered in the event of a Level two or three 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 locations identified as PBAs.</li> <li>The status of baseline studies relevant to the PAP are tracked by Woodside through the maintenance of a Corporate Environment Environmental Baseline Database (managed by the Woodside Environmental Science team), as well as accessing external databases such as the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA)<sup>10</sup> (refer to <b>ANNEX C: Oil Spill Scientific monitoring Program</b>).</li> </ul>

### 5.7.3 Summary – scientific monitoring

The resulting scientific monitoring capability has been assessed against the PAP credible spill scenarios for marine diesel. 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 determined to be medium. The SMP’s main objectives can be met, with no additional, alternative or improved control measures providing further benefit.

### 5.7.4 Response planning: need, capability and gap – scientific monitoring

The receptor locations identified in **ANNEX D: 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 Standby SMP 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 in the event of a spill are:

- Dampier Archipelago
- Rankin Bank
- Montebello Islands and Montebello State Marine Park
- Barrow Island and the Lowendal Islands
- Pilbara Islands – Middle and Southern Island Groups
- Ningaloo Coast and Muiron Islands (State Marine Park, AMP and WHA)

Documented baseline studies are available for certain sensitive receptor locations including the Dampier Archipelago, Montebello Islands, Barrow Island, Lowendal Islands, Rankin Bank, Pilbara Islands – Middle and Southern Island Groups, and Ningaloo coast and the Muiron Islands (**ANNEX D: Monitoring Program and Baseline Studies for the Petroleum Activities Program, Table D-2**). The SMP approach in the response phase would still deploy SMP teams to maximise the opportunity to collect pre-emptive baseline data at sensitive receptor locations, i.e., the sections of the WA Coast not immediately contacted to hydrocarbons. As the exact locations where hydrocarbon contact occurs may be unpredictable, SM01 would be mobilised as a priority to be able to detect

<sup>10</sup> <https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort>

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 option analysis in **Section 6.7** considers ways to reduce the gap by considering alternate, additional, and/or improved control measures on each selected response strategy.

### 5.7.5 Environmental performance based on need

Table 5-16: Environment performance – 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
18	<ul style="list-style-type: none"> <li>Woodside has an established and dedicated SMP team comprising the Environmental Science Team and additional Environment Advisers within the Health Safety Environment (HSE) Function.</li> </ul>	18.1	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.	<ul style="list-style-type: none"> <li>Training materials.</li> <li>Training attendance registers.</li> <li>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.</li> </ul>
19	<ul style="list-style-type: none"> <li>Woodside has contracted SMP service provider to provide scientific personnel to resource a base capability of one team per SMP (SM01-SM10, see <b>ANNEX C: Oil Spill Scientific monitoring Program, Table C-2</b>) 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).</li> <li>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.</li> </ul>	19.1	<p>Woodside maintains the capability to mobilise personnel required to conduct scientific monitoring programs SM01 to SM10 (except desktop-based SM08):</p> <ul style="list-style-type: none"> <li>Personnel are sourced through the existing standby contract with SMP standby contractor, as detailed within the SMP Implementation Plan.</li> <li>Scientific Monitoring Program Implementation Plan describes the process for standing up and implementing the scientific monitoring programs.</li> <li>SMP team stand up personnel receive training regarding the stand up, activation and implementation of the SMP on an annual basis.</li> </ul>	<ul style="list-style-type: none"> <li>OSPU Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master.</li> <li>SMP resource report of personnel availability provided by SMP contractor on monthly basis (SMP resourcing report register).</li> <li>Training materials.</li> <li>Training attendance registers.</li> <li>Competency criteria for SMP roles.</li> <li>SMP annual arrangement testing and reporting.</li> </ul>
20	<ul style="list-style-type: none"> <li>Roles and responsibilities for SMP implementation are captured in <b>ANNEX C: Oil Spill Scientific monitoring Program, Table C-1</b>) and the SMP team (as per the organisational structure of the CIMT) is outlined in SMP Operational Plan. Woodside has a defined Crisis and Incident Management structure including Source Control, Operations, Planning and Logistics functions to manage a loss of well control response.</li> </ul>	20.1	<ul style="list-style-type: none"> <li>Woodside has established an SMP organisational structure and processes to stand up and deliver the SMP.</li> </ul>	<ul style="list-style-type: none"> <li>SMP Oil Spill Scientific Monitoring Operational Plan.</li> <li>SMP Implementation Plan.</li> <li>SMP annual arrangement testing and reporting.</li> </ul>

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	<ul style="list-style-type: none"> <li>• SMP Team structure, interface with SMP standby contractor and linkage to the CIMT is presented in <b>ANNEX C: Oil Spill Scientific monitoring Program, Figure C-1</b>.</li> <li>• Woodside has a defined Command, Control and Coordination structure for Incident and Emergency Management that is based on the Australasian Inter-Service Incident Management System (AIIMS) framework utilised in Australia.</li> <li>• Woodside uses 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.</li> <li>• SMP activated via the First Strike Plan (FSP).</li> <li>• Step by step process to activation of individual SMPs provided in the SMP Operational Plan.</li> <li>• All decisions made regarding SMP logged in the online IMS (SMP team members trained in using Woodside’s online Incident Management System).</li> <li>• SMP component input to the CIMT IAP as per the identified CIMT timed sessions and the SMP IAP logged on the online IMS.</li> <li>• Woodside Environmental Science Team provide awareness training on the activation and stand-up of the Scientific Monitoring Programme (SMP) for the Environment Advisers in Woodside who are listed on the SMP team on an annual basis.</li> <li>• Woodside Environmental Science Team provide awareness training on the activation and stand-up of the SMP for the SMP Standby contractor.</li> <li>• Woodside Environmental Science Team coordinates an annual SMP arrangement testing exercise which the Standby SMP contractor SMP team participates in since 2016 (refer to the SMP Document Register).</li> </ul>			
21	<ul style="list-style-type: none"> <li>• Chartered and mutual aid vessels.</li> <li>• 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.</li> <li>• 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 <b>ANNEX C: Oil Spill Scientific monitoring Program, Table C-2</b>).</li> <li>• Nearshore mainland waters could use the same approach as for open water. Smaller vessels may be used where available and</li> </ul>	21.1	<p>Woodside maintains standby SMP capability to mobilise equipment required to conduct scientific monitoring programs SM01 to SM10 (except desktop-based SM08):</p> <ul style="list-style-type: none"> <li>• Equipment are sourced through the existing standby contract with Standby SMP standby contractor, as detailed within the SMP Implementation Plan.</li> </ul>	<ul style="list-style-type: none"> <li>• HSP Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master.</li> <li>• SMP standby monthly resource reports of equipment availability provided by SMP contractor (SMP resourcing report register).</li> <li>• SMP annual arrangement testing and reporting.</li> </ul>

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	<p>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.</p> <ul style="list-style-type: none"> <li>• 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 <b>ANNEX C: Oil Spill Scientific monitoring Program, Table C-2</b>)). 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).</li> <li>• 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.</li> </ul>			
22	<p>Woodside’s SMP approach addresses the pre-PAP acquisition of baseline data for PBAs with ≤ 10 days if required following a baseline gap analysis process.</p> <p>Woodside maintains knowledge of Environmental Baseline data through:</p> <ul style="list-style-type: none"> <li>• Documentation annual reviews of the Woodside Baseline Environmental Studies Database, and specific activity baseline gap analyses.</li> <li>• Accessing external databases such as the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA) (refer to <b>ANNEX C: Oil Spill Scientific monitoring Program</b>).</li> </ul>	22.1	<ul style="list-style-type: none"> <li>• Annual reviews of environmental baseline data.</li> <li>• PAP specific Pre-emptive Baseline Area baseline gap analysis.</li> </ul>	<ul style="list-style-type: none"> <li>• Annual review/update of Woodside Baseline Environmental Studies Database.</li> <li>• Desktop review to assess the environmental baseline study gaps completed prior to EP submission.</li> <li>• Accessing baseline knowledge via the SMP annual arrangement testing.</li> </ul>

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Environmental Performance Outcome		SMP plan to acquire response phase monitoring targeting pre-emptive data achieved.		
Control measure		Performance Standard		Measurement Criteria
23	Woodside's SMP approach addresses: <ul style="list-style-type: none"> <li>Scientific data acquisition for PBAs &gt;10 days to hydrocarbon contact and activated in the response phase and</li> <li>Transition into post-response SMP monitoring.</li> </ul>	23.1	<b>PBA baseline data acquisition in the response phase</b> If baseline data gaps are identified for PBAs that has predicted hydrocarbon contact (contact time > 10 days), there will be a response phase effort to collect baseline data with priority in implementing SMPs 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.	<ul style="list-style-type: none"> <li>Response SMP plan.</li> <li>Woodside's online Incident Management System Records.</li> <li>SMP component of the Incident Action Plan.</li> </ul>
		23.2	<b>Post Spill contact</b> 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).	<ul style="list-style-type: none"> <li>SMP planning document.</li> <li>SMP Decision Log.</li> <li>IAPs.</li> </ul>

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Environmental Performance Outcome		Implementation of the SMP (response and post-response phases).		
Control measure		Performance Standard		Measurement Criteria
24	<ul style="list-style-type: none"> <li>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.</li> <li>SMP supporting documentation: (1) Oil Spill Scientific Monitoring Operational Plan; (2) SMP Implementation Plan and (3) SMP Process and Methodologies Guideline.</li> <li>The Oil Spill Scientific Monitoring Operational Plan details the process of SMP selection, input to the IAP to trigger operational logistic support services. Methodology documents for each of the ten SMPs are accessible detailing equipment, data collection techniques and the specifications required for the survey platform support.</li> <li>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.</li> </ul>	24.1	<b>Implementation of SM01</b> 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: <ul style="list-style-type: none"> <li>Documentation as per requirements of the SMP Operational Plan.</li> <li>Woodside's online Incident Management System Records.</li> <li>SMP component of the IAP.</li> <li>SMP data records from field.</li> </ul>
		24.2	<b>Implementation of SM02 to SM10</b> SM02-SM10 will be implemented in accordance with the objectives and activation triggers as per <b>ANNEX C: Oil Spill Scientific monitoring Program, Table C-2.</b>	Evidence SMPs have been triggered: <ul style="list-style-type: none"> <li>Documentation as per requirements of the SMP Operational Plan.</li> <li>Woodside's online Incident Management System Records.</li> <li>SMP component of the IAP.</li> <li>SMP Data records from field.</li> </ul>
		24.3	<b>Termination of SMP plans</b> The Scientific Monitoring Program will be terminated in accordance with termination triggers for the SMPs detailed in <b>ANNEX C: Oil Spill Scientific monitoring Program, Table C-2</b> , and the Termination Criteria Decision-tree for Oil Spill Environmental Monitoring ( <b>ANNEX C: Oil Spill Scientific monitoring Program, Figure C-3</b> ):	Evidence of Termination Criteria triggered: <ul style="list-style-type: none"> <li>Documentation and approval by relevant persons/ organisations to end SMPs for specific receptor types.</li> </ul>

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## 5.8 Incident Management System

The Incident Management System (IMS) is both a control measure and a measurement criterion. As a control measure the IMS function is to prompt, facilitate and record the completion of three key response planning processes detailed below. As a measurement criterion the IMS records the evidence of the timeliness of all response actions included in the environmental performance standards and the plans used of the PAP. As the IMS does not directly remove hydrocarbons spilled into the marine environment there is no direct relationship to the response planning need.

### 5.8.1 Incident action planning

The CIMT will be required to collect and interpret information from the scene of the incident to determine support requirements to the site based IMT, develop an incident action plan (IAP) and assist the IMT with the execution of that plan. The site-based incident controller (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 Duty Manager (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.

### 5.8.2 Operational NEBA process

In the event of a response Woodside will confirm 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 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 a response activity. For example, if vessels are required for access to nearshore or onshore areas, anchoring locations will be selected to minimise disturbance to benthic habitats. Vessel cleanliness would be commensurate with the receiving environment. The operational NEBA will consider the risks and benefits of conducting other response techniques.

The operational NEBA process is also used to terminate a response. Using data from operational and scientific monitoring activities the response to a hydrocarbon spill will be terminated in accordance with the termination process outlined in the Oil Pollution Emergency Arrangements (Australia). In effect the operational NEBA will determine whether there is net environmental benefit to continue response operations.

### 5.8.3 Consultation engagement process

Woodside will ensure persons/ organisations are engaged during the spill response in accordance with internal standards as outlined in **Table 5-17**. This process requires that Woodside will:

- Undertake all required notifications (including government notifications) for persons/ organisations in the region (identified in the First Strike Plan). This includes notification to mariners to communicate navigational hazards introduced through response equipment and personnel.
- In the event of a response, identify and engage with relevant persons/ organisations and continually assess and review.

### 5.8.4 Environmental performance based on need

Table 5-17: Environmental Performance – Incident Management System

Environmental Performance Outcome		To support the effectiveness of all other control measures and monitor/record the performance levels achieved.			
Control measure		Performance Standard		Measurement Criteria (Section 5.9)	
25	Operational NEBA	25.1	Confirm that the response techniques adopted at the time of acceptance remain appropriate to reduce the consequences of the spill within 24 hours.	1, 3A	
		25.2	Record the evidence and justification for any deviation from the planned response activities.		
		25.3	Record the information and data from operational and scientific monitoring activities used to inform the NEBA.		
26	Stakeholder engagement	26.1	Prompt and record all notifications (including government notifications) for persons/ organisations in the region are made		
		26.2	In the event of a response, identification of relevant stakeholders will be re-assessed throughout the response period.		
		26.3	Undertake communications in accordance with: <ul style="list-style-type: none"> <li>• Woodside Crisis Management Functional Support Team Guideline – Reputation</li> <li>• External Communication and Continuous Disclosure Procedure</li> <li>• External Stakeholder Engagement Procedure</li> </ul>		
27	Personnel required to support any response	27.1	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
		27.2	A duty roster of trained and competent people will be maintained to ensure that minimum manning requirements are met all year round.		3C
		27.3	Immediately activate the IMT with personnel filling one or more of the following roles: <ul style="list-style-type: none"> <li>• Operations Duty Manager</li> <li>• Operations Coordinator</li> <li>• Deputy Operations Coordinator</li> <li>• Planning Coordinator</li> <li>• Logistics (materials, aviation, marine and support positions)</li> <li>• Management Support</li> <li>• Health and Safety Advisor</li> <li>• Environment Duty Manager</li> <li>• People Coordinator</li> <li>• Public Information Coordinator</li> <li>• Intelligence Coordinator; and</li> <li>• Finance Coordinator.</li> </ul>		1, 2, 3B, 3C, 4
		27.4	Collect and interpret information from the scene of the incident to determine support requirements to the site based IMT, develop an Incident Action Plan (IAP) and assist with the execution of that plan.		
		27.5	Security and emergency management (S&EM) advisors will be integrated into the CIMT to monitor performance of all functional roles.		
		27.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.		
		27.7	Follow the OPEA, Operational Plans, FSPs, support plans and the IAPs developed.	1, 2, 3A, 4	
		27.8	Contribute to Woodside’s response in accordance with the aims and objectives set by the Duty Manager.	1, 2, 3B, 3C, 4	

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## 5.9 Measurement criteria for all response techniques

Woodside ensures compliance with environmental performance outcomes and standards through four primary mechanisms. The performance tables aforementioned 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 Incident 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 Incident 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 communicates the:

- Incident objectives;
- Status of assets;
- Operational period objectives;
- Response techniques (defined during response planning); and
- 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

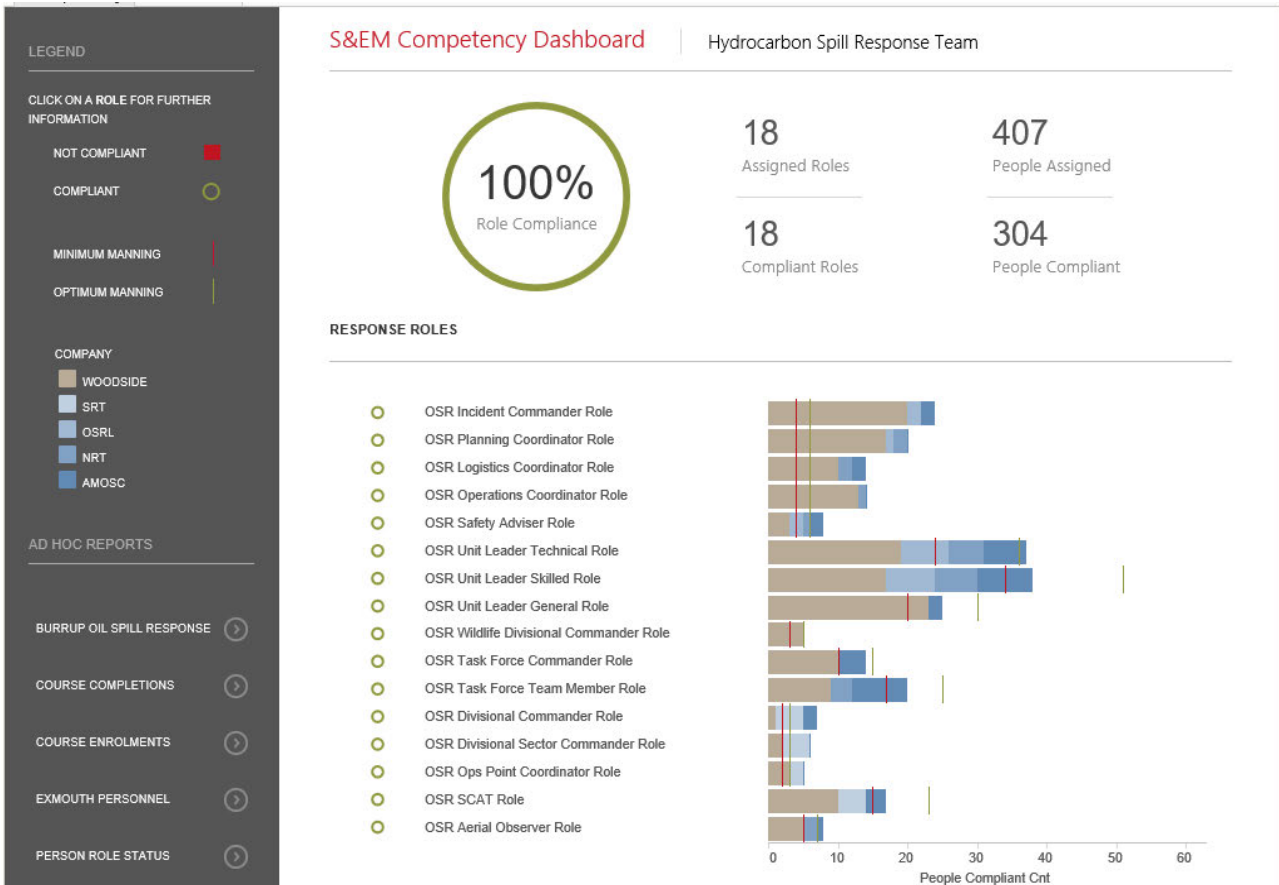
The S&EM competency dashboard records the number of trained and competent responders available across Woodside, and some external providers, to participate in a response.

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:

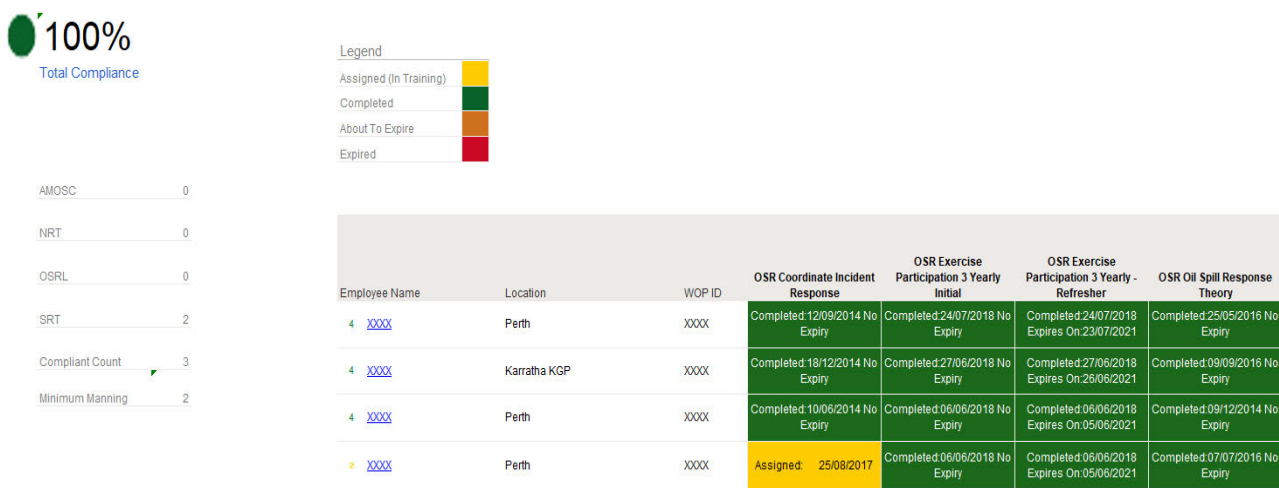
- Woodside internal
- Australian Marine Oil Spill Centre (AMOSC) core group
- AMOSC
- Oil Spill Response Limited (OSRL)
- Marine Spill Response Corporation (MSRC)
- AMSA
- Woodside contracted workforce



**Figure 5-2: Example screen shot of the hydrocarbon spill preparedness (HSP) competency dashboard**

The Dashboard is one of Woodside’s key means of monitoring its readiness to respond. It also and shows Woodside can meet the requirements of the environmental performance standard related 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 response plans, operational plans, support plans and [tactical response plans](#) in [Annex E](#)) 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, Crisis Management Team (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<sup>11</sup> vessel schedule, dispersant availability, rig/vessels monitoring, equipment stockpiles, tracking buoy locations and the CIMT duty roster.
- d) **Compliance & Assurance** – Ensures all regulator inspection outcomes are actioned and closed out, the global legislation register is up to date and 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 & 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; and
  - 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

<sup>11</sup> The Integrated fleet consists of vessels from multiple operators that have been contracted to Woodside to undertake a number of duties including hydrocarbon spill response



- Spill equipment and services requirements.

The procedure also details the roles and responsibilities of the dedicated Woodside Hydrocarbon Spill Preparedness team. This team is responsible for:

- Assuring that Woodside hydrocarbon spill responders meet competency requirements.
- Establishing the competency requirements, annual training schedule and a training register of trained personnel.
- Establishing and maintaining the total numbers of trained personnel required to provide an effective response to any hydrocarbon spill incident.
- Ensuring equipment and services contracts are maintained
- Establishing OPEPs
- Establishing OPEAs
- Priority response receptor determination
- ALARP determination
- Ensuring compliance and assurance is undertaken in accordance with external and internal requirements.

## 6 ALARP EVALUATION

This Section should be read in conjunction with **Section 5** which is the capability planned for this activity.

### 6.1 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

##### 6.1.1.1 Alternative Control Measures

Alternative Control Measures considered					
<i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>					
Option considered	Environmental consideration	Feasibility	Approximate cost	Assessment conclusions	Implemented
Aerostat (or similar inflatable observation platform) for localised aerial surveillance.	Lead time to Aerostat surveillance is disproportionate to the environmental benefit. The system also provides a very limited field of visibility around the vessel it is deployed from.	Long lead time to access (>10 days). Each system would require an operator to interpret data and direct vessels accordingly. Requires multiple systems for shoreline use.	Purchase cost per system approx. A\$300,000.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	No

##### 6.1.1.2 Additional Control Measures

Additional Control Measures considered					
<i>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</i>					
Option considered	Environmental consideration	Feasibility	Approximate cost	Assessment conclusions	Implemented
Additional personnel trained to use systems.	Current arrangement provides an environmental benefit in the availability of trained personnel facilitating access to monitoring data used to inform all other response techniques. No improvement required.	No improvement can be made, all personnel in technical roles e.g. intelligence unit are trained and competent on the software systems. Personnel are trained and exercised regularly. Use of the software and systems forms part of regular work assignments and projects.	Cost for training in-house staff would be approx. A\$25,000.	This option is not adopted as the current capability meets the need.	No
Additional satellite tracking buoys to enable greater area coverage.	Increased capability does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	Tracking buoy on location at manned facility, additional needs are met from Woodside owned stocks in King Bay Support Base (KBSB) and Exmouth or can be provided by service provider.	Cost for an additional satellite tracking buoy would be A\$200 per day or A\$6000 to purchase.	This option is not adopted as the current capability meets the need, but additional units are available if required.	No
Additional trained aerial observers.	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.	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\$2000 per person per day.	This option is not adopted as the current capability meets the need, but additional observers are available via response contractors if required.	No

##### 6.1.1.3 Improved Control Measures

Additional Control Measures considered					
<i>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</i>					
Option considered	Environmental consideration	Feasibility	Approximate cost	Assessment conclusions	Implemented
Faster turnaround time from modelling contractor.	Improved control measure does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	External contractor on CIMT roster to be called as soon as required. However initial information needs to be gathered by CIMT team to request an accurate model. External contractor has	Modelling service with a faster activation time would be achieved via membership of an alternative modelling service at an annual cost of A\$50,000 for 24hr access plus an initial A\$5000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and the challenge of collecting essential	No

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<b>Additional Control Measures considered</b>					
<i>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</i>					
		person on call to respond from their own location.		data/implementing reliable modelling in shorter timeframes.	
Night time aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The images would be of low quality and as such the variable is not adopted.	Flights will only occur when deemed safe by the pilot. The risk of night operations is disproportionate to the benefit gained, as images from sensors (IR, UV, etc.) will be low quality.  Flight time limitations will be adhered to.	No improvement can be made without risk to personnel health and safety and breaching Woodside's Golden Rules.	This option is not adopted as the safety considerations outweigh any environmental benefit gained.	<b>No</b>
Faster mobilisation time (for water quality monitoring).	Due to the restriction on accessing the spill location on Day one there is no environmental benefit in having vessels available from day one. The cost of having dedicated equipment and personnel is disproportionate to the environmental benefit. The availability of vessels and personnel meets the response need.  Shortening the timeframes for vessel availability would require dedicated response vessels on standby in KBSB.  The cost and organisational complexity of employing two dedicated response vessels (approximately \$15M/year per vessel) is considered disproportionate to the potential environmental benefit to be realised by adopting this delivery options.	Operations are not feasible on day 1 as the hydrocarbon will take time to surface, and volatility has potential to cause health concerns within the first 24 hours of the response.	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 m 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.	<b>No</b>

### 6.1.2 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

## 6.2 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				
<i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>				
Option considered	Environmental consideration	Feasibility	Cost	Implemented
No reasonably practical alternative control measures identified.				N/A

#### 6.2.1.2 Additional Control Measures

Additional Control Measures considered				
<i>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</i>				
Option considered	Environmental consideration	Feasibility	Cost	Implemented
No reasonably practical alternative control measures identified.				N/A

#### 6.2.1.3 Improved Control Measures

Improved Control Measures considered				
<i>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</i>				
Option considered	Environmental consideration	Feasibility	Cost	Implemented
No reasonably practical alternative control measures identified.				N/A

### 6.2.2 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

### 6.3 Shoreline Protection and Deflection - ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in **Section 5** with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

#### 6.3.1 Existing Capability – Shoreline Protection and Deflection

Woodside’s existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside’s direct control.

#### 6.3.2 Response Planning: Scarborough Seabed Intervention and Trunkline Installation – Shoreline Protection and Deflection

Planning for shoreline protection is based upon identification of Response Protection Areas (RPAs) from deterministic modelling and the logistics associated with deploying protection at these locations. The response planning scenarios indicate that this would require effective mobilisation to priority shorelines and maintenance of protection until operational monitoring confirms that the locations were no longer at risk. Woodside has identified the RPAs from deterministic modelling results provided from specific scenarios.

The control measures selected provide capability to mobilise shoreline protection equipment within 24 hours.

Modelling for CS-01 indicates that the shortest timeframe for shoreline contact at the Dampier Archipelago is 2.2 days. No shoreline impact is predicted for CS-02 and CS-03.

The existing capability is considered sufficient to mobilise and deploy protection at all identified RPAs prior to hydrocarbon contact. In the event of a real spill, protection activities will be guided by predictive modelling, direct observation/surveillance and remote sensing methods (OM01, OM02 and OM03) which will be employed from the outset of a spill to track the oil and assess receptors at risk. This will then trigger the undertaking of pre-emptive assessments of sensitive receptors at risk (OM04). OM04 would only be undertaken in liaison with WA DoT. Due to potentially high levels of volatiles from a spill of marine diesel, shoreline protection and deflection operations would only be undertaken if safety of responders could be ensured.

TRPs exist for many of the RPAs identified. The plans identify values and sensitivities that would be protected at each location. Modelling does not predict that all priority protection shorelines will be at risk of contact at the same time. Therefore, to allow for the best use of available shoreline protection and deflection resources, operational monitoring (OM01, OM02 and OM03) will inform the response, targeting RPAs where contact is predicted. **Table 6-1** below outlines the capability required (number of RPAs predicted to be impacted) against the capability available (number of shoreline protection and deflection operations that can be mobilised and deployed). As can be seen from the table below, Woodside’s capability exceeds the response planning need identified for shoreline protection and deflection operations at identified RPAs.

**Table 6-1: Response planning – shoreline protection and deflection**

	Shoreline Protection & Deflection (SPD)	Day	Day	Day	Day	Day	Day	Day	Week	Week	Week	Month	Month	Month
		1	2	3	4	5	6	7	2	3	4	2	3	4
	Oil on shoreline (from deterministic modelling) m <sup>3</sup>	0	3	0	0	0	0	0	0	0	0	0	0	0
<b>A</b>	<b>Capability Required</b>													
<b>A1</b>	Number of RPAs contacted (> 100 g/m <sup>2</sup> ) – Marine diesel release (CS-01)	0	1	0	0	0	0	0	0	0	0	0	0	0
<b>B</b>	<b>Capability Available (operations per day)</b>													
<b>B1</b>	SPD operations available – per day (lower)	0	1	1	2	2	4	6	70	70	70	330	330	330
<b>B2</b>	SPD operations available – per day (upper)	1	2	3	4	6	8	10	84	84	84	336	336	336
<b>C</b>	<b>Capability Gap (operations per day)</b>													
<b>C1</b>	SPD operations gap – per day (lower)	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>C2</b>	SPD operations gap – per day (upper)	0	0	0	0	0	0	0	0	0	0	0	0	0

A1 – the number of Response Protection Areas contacted by surface hydrocarbons above 100 g/m<sup>2</sup>

B1 and B2 – the upper and lower number of shoreline protection and deflection operations available (based on response planning assumptions in **Section 0**),

C1 and C2 – the gap between the upper and lower number of shoreline protection and deflection operations required in A1 compared to the operations available in B1 and B2

**Table 6-2: RPAs for Scarborough Seabed Intervention and Trunkline Installation**

Areas of coastline contacted	Conservation status	IUCN protection category	CS-01	
			Minimum time to shoreline contact (above 100 g/m <sup>2</sup> ) in days <sup>(12)</sup>	Maximum shoreline accumulation (above 100 g/m <sup>2</sup> ) in m <sup>3</sup> <sup>(13)</sup>
Dampier Archipelago	National Heritage Property	N/A	2.2	3 m <sup>3</sup>

<sup>12</sup> This volume and time represent the first time to contact on defined shoreline polygon and the maximum volume ashore for that 24 hour period.

<sup>13</sup> This volume and time represent the maximum volume ashore on defined shoreline polygon for any 24 hour time period

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**Table 6-3: Indicative Tactical response plan, objectives and methods for RPAs with predicted contact**

Tactical Response Plan	Response aims and methods
Legendre Island – Dampier	<p><b>First response aim:</b> Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident and to assist in locating relevant booming areas.</p> <p><b>Second response aim:</b> Protection of sensitive shorelines (mangrove) at Legendre Island through use of shoreline booms. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/weather conditions</p> <p><b>Third response aim:</b> Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate</p> <p><b>Fourth response aim:</b> Collection and specialist cleaning/rehabilitation of oiled wildlife</p> <ul style="list-style-type: none"> <li>• Relevant permissions must be sought from DBCA to carry out any response operations within the limits of the area</li> <li>• In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside has an MOU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside is a member of both AMOSC and OSRL and has the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7.</li> </ul> <p>NOTE: This TRP should be considered a draft until it has been verified and tested.</p>
Rosemary Island – Dampier	<p><b>First response objective:</b> Ongoing operational monitoring and evaluation of the hydrocarbon spill to adapt aims and response tactics to the evolving nature of the incident and to assist in locating relevant booming areas</p> <p><b>Second response objective:</b> Recovery of floating oil at sea where possible through the use of skimming systems and other appropriate recovery devices to reduce shoreline impact</p> <p><b>Third response objective:</b> Protection of sensitive shorelines at Rosemary Island through use of shoreline booms. Formation types to deploy will be dependent on the time available until the hydrocarbon impacts the shoreline and local geographical and tidal/weather conditions</p> <p><b>Fourth response objective:</b> Clean-up of the shoreline. Manual clean up techniques, use of mechanical recovery methods and techniques where appropriate</p> <ul style="list-style-type: none"> <li>• Relevant permissions must be sought from DBCA to carry out any response operations within the limits of the area</li> <li>• In the event that the existing Woodside equipment stockpile at the King Bay Supply Base becomes exhausted, Woodside has an MOU with AMSA and the DoT to provide surplus equipment from their stockpile. Additionally, Woodside is a member of both AMOSC and OSRL and has the ability to call upon their relevant technical advisory services and equipment stockpiles 24/7.</li> </ul> <p>NOTE:</p> <ul style="list-style-type: none"> <li>• See Port of Dampier MOPP page 113 for Rosemary Island response plan.</li> <li>• Dependent on seasonality presence of sensitive receptors, the strategies to either protect or clean-up the shorelines will be decided through NEBA.</li> <li>• This TRP should be considered a draft until it has been verified and tested.</li> </ul>

Pre-emptive mobilisation of equipment and personnel would commence as soon as practicable prior to oil contact. Additional resources would be mobilised depending on the scale of the event to increase the length or number of shorelines being protected.

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A shoreline protection and deflection response would be launched and any additional TRPs drafted only when operational monitoring (OM02 and OM03) and modelling (OM01) indicate that contact could occur at RPA(s). The outputs from the monitoring will inform the need for and/or direct any additional response techniques and, additionally, if/when the spill enters State Waters and control of the incident passes to WA DoT.



### 6.3.3 Shoreline Protection and Deflection – Control Measure Options Analysis

#### 6.3.3.1 Alternative Control Measures

Alternative Control Measures Considered					
<i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>					
Option considered	Environmental consideration	Feasibility	Approximate cost	Assessment conclusions	Implemented
Pre-position equipment at Response Protection Areas (RPAs)	Additional environmental benefit of having equipment prepositioned is considered minor. Equipment is currently available to RPAs and additional shorelines, within estimated minimum times until shoreline contact at RPAs, enabling mobilisation of the selected delivery options.	The incremental environmental benefit associated with these delivery options is considered minor and unlikely to reduce the environmental consequence of a significant hydrocarbon release beyond the adopted delivery options. Considering the highly unlikely nature of a significant hydrocarbon release and the costs and organisational complexity associated with prepositioning and maintenance of equipment, the sacrifice is considered disproportionate to the limited environmental benefit that might be realised.  Furthermore, these options would conflict with the mutual aid philosophy being adopted under the selected delivery options.  The selected delivery options for shoreline protection and deflection meet the relevant objectives of this control measure and do not require prepositioned or additional equipment in Exmouth.	Total cost to preposition protection/ deflection packages at each site of potential impact would be approx. A\$6100 per package per day.	This option is not adopted as the existing capability meets the need.	<b>No</b>

#### 6.3.3.2 Additional Control Measures

Additional Control Measures Considered					
<i>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</i>					
Option considered	Environmental consideration	Feasibility	Approximate cost	Assessment conclusions	Implemented
Supplemented stockpiles of equipment in Exmouth to protect additional shorelines	Additional equipment would increase the number of receptor areas that could be protected from hydrocarbon contact. However, current availability of personnel and equipment is capable of protecting up to 30 km of shoreline, commensurate with the scale and progressive nature of shoreline impact. Additional stocks would be made available from international sources if long term up scaling were necessary.  A reduction in environmental consequence from a 'B' rating (serious long-term impacts) is unlikely to be realised as a result of having more equipment available locally.	The incremental environmental benefit associated with these delivery options is considered minor and unlikely to reduce the environmental consequence of a significant hydrocarbon release beyond the adopted delivery options. Considering the highly unlikely nature of a significant hydrocarbon release and the costs and organisational complexity associated with prepositioning and maintenance of equipment, the sacrifice is considered disproportionate to the limited environmental benefit that might be realised.  Furthermore, these options would conflict with the mutual aid philosophy being adopted under the selected delivery options.  The selected delivery options for shoreline protection and deflection meet the relevant objectives of this control measure and do not require prepositioned or additional equipment in Exmouth.	Total cost for purchase supplemental protection and deflection equipment would be approx. A\$455,000 per package.	This option is not adopted as the existing capability meets the need.	<b>No</b>
Additional trained personnel	The level of training and competency of the response personnel ensures the shoreline protection and deflection operation is delivered with minimum secondary impact to the environment. Training additional personnel does not provide an increased environmental benefit.	Additional personnel required to sustain an extended response can be sourced through the Woodside <i>People &amp; Global Capability Surge Labour Requirement Plan</i> . Additional personnel sourced from contracted OSRO's (OSRL/AMOSC) to manage other responders. Response personnel are trained and exercised regularly in shoreline response techniques and methods. All personnel involved in a response will receive a full operational/safety brief prior to commencing operations.	Additional Specialist Personnel would cost A\$2000 per person per day.	This option is not adopted as the existing capability meets the need.	<b>No</b>

### 6.3.3.3 Improved Control Measures

Improved Control Measures considered					
Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility					
Option considered	Environmental consideration	Feasibility	Approximate cost	Assessment conclusions	Implemented
Faster response/ mobilisation time	Hydrocarbons are predicted to strand after a period of approximately 2.5 days therefore allowing enough time to re-locate existing equipment, personnel and other resources to the most appropriate areas.	Response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial protection and deflection response will be available for mobilisation within 24-48hrs of activation.  Additional equipment from existing stockpiles and oil spill response service providers can be on scene within days.  Given modelling does not predict shoreline accumulation until approx. 2.5 days, Woodside considers that there is sufficient time for deployment of protection and deflection operations prior to impact.	The cost of establishing a local stockpile of new mitigation equipment (including protection and deflection boom) closer to the expected hydrocarbon stranding areas is not commensurate with the need.	This option is not adopted as the existing capability meets the need.	<b>No</b>

### 6.3.4 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

## 6.4 Shoreline clean-up – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in **Section 5** with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

### 6.4.1 Existing Capability – Shoreline Clean-up

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

### 6.4.2 Response planning: Scarborough Seabed Intervention and Trunkline Installation - Shoreline Clean-up

Woodside has assessed existing capability against the WCCS and has identified that the range of techniques provide an ongoing approach to shoreline clean-up at identified RPAs.

Modelling for CS-01 indicates that the shortest timeframe for shoreline contact at the Dampier Archipelago is 2.2 days. No shoreline impact is predicted for CS-02 and CS-03.

The maximum shoreline accumulation volumes from CS-01 have been presented for any given day/ week / month of the response to provide a single response planning scenario so that it provides a worst-case scenario for planning purposes, as outlined below in **Table 6-4**. The existing shoreline clean-up capability would be sufficient by Day 2. From Day 2 onwards, the available response capability is predicted to be sufficient as the number of personnel and equipment mobilised to RPAs increases. The volumes of accumulated oil and the required scale of the response will also depend on the success of other offshore techniques preventing shoreline oiling occurring; other offshore response techniques and their associated reduction in oil volumes have not been taken into account when determining the shoreline clean-up requirements in **Table 6-4** and the approach is therefore conservative.

The potential scale and remoteness of a response precludes the stockpiling or prepositioning of equipment specific to shorelines. The most significant constraint is accommodation and transport of personnel in the Exmouth region to undertake clean-up operations and to manage wastes generated during the response effort. From previous assessment of facilities in the Exmouth region, Woodside estimates that current accommodation can cater for a range of 500-700 personnel per day.

Woodside has identified several options which could be mobilised to achieve defined response objectives. Evaluation considers the benefit in terms of the time to respond and the scale of response made possible by each option. The evaluation of possible alternative, additional and improved control measures is summarised in **Section 6.4.3**.

**Table 6-4: Response Planning – Shoreline Clean-up**

Shoreline clean-up (Phase 2)	Day	Day	Day	Day	Day	Day	Day	Day	Week	Week	Week	Month	Month	Month	Month
	1	2	3	4	5	6	7	2	3	4	2	3	4	5	
Oil on shoreline (from deterministic modelling) m <sup>3</sup>															
Shoreline accumulation (above 100 g/m <sup>2</sup> ) – m <sup>3</sup>	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil remaining following response operations – m <sup>3</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>A Capability Required (number of operations)</b>															
A1 Shoreline clean-up operations required (lower)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
A2 Shoreline clean-up operations required (upper)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>B Capability Available (number of operations)</b>															
B1 Shoreline clean-up operations available - Stage 2 - Manual (lower)	0	1	3	5	8	12	15	105	105	105	560	560	560	560	
B2 Shoreline clean-up operations available - Stage 2 - Manual (upper)	0	2	5	8	10	15	20	140	140	140	560	560	560	560	
<b>C Capability Gap</b>															
C1 Shoreline clean-up operations gap (lower)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C2 Shoreline clean-up operations gap (upper)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

A1 and A2 – the number of Shoreline Clean-up operations required based on the hydrocarbon volumes ashore above 100 g/m<sup>2</sup>

B1 and B2 – the upper and lower number of shoreline clean-up operations available (based on response planning assumptions in **Section 5.2**),

C1 and C2 – the gap between the upper and lower number of shoreline clean-up operations required in A1 and A2 compared to the operations available in B1 and B2

**Table 6-5: RPAs for Scarborough Seabed Intervention and Trunkline Installation**

Areas of coastline contacted	Conservation status	IUCN protection category	CS-01	
			Minimum time to shoreline contact (above 100 g/m <sup>2</sup> ) in days <sup>(14)</sup>	Maximum shoreline accumulation (above 100 g/m <sup>2</sup> ) in m <sup>3</sup> <sup>(15)</sup>
Dampier Archipelago	National Heritage Property	N/A	2.2	3 m <sup>3</sup>

<sup>14</sup> This volume and time represent the first time to contact on defined shoreline polygon and the maximum volume ashore for that 24 hour period.

<sup>15</sup> This volume and time represent the maximum volume ashore on defined shoreline polygon for any 24 hour time period

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### 6.4.3 Shoreline Clean-up – Control measure options analysis

#### 6.4.3.1 Alternative Control Measures

##### Alternative Control Measures Considered

Alternative, 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.				

#### 6.4.3.2 Additional Control Measures

##### Additional Control Measures Considered

Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate cost	Implemented
Train additional personnel in shoreline clean-up	No environmental benefit is gained through having additional personnel trained. Current personnel arrangements meet the ongoing need for trained personnel for all scenarios.	It is feasible to train more personnel in shoreline clean-up, however, additional personnel required to sustain an extended response can be sourced through the Woodside People & Global Capability Surge Labour Requirement Plan. This surge capacity is not expected to be required for any of the scenarios.	Given there is no environmental benefit, any costs are disproportionate to the benefit gained.	No
Additional trained personnel deployed	Maintaining control of 200 competent personnel is deemed manageable and appropriate for this activity. Additional personnel conducting clean-up activities may be able to complete the clean-up in a shorter timeframe, however managing a smaller, targeted response is expected to achieve an environmental benefit through ensuring the shoreline clean-up response is suitable and scalable for the shoreline substrate and sensitivity type. This will ensure there is no increased impact from the shoreline clean-up through the presence of unnecessary personnel and equipment. Therefore, no environmental benefit is expected from deploying additional trained personnel past 200.	It is feasible to deploy additional trained personnel in addition to the 200 already sourced through existing arrangements. These could be sourced through existing contracts with oil spill response organisations, labour hire organisations and environmental panel contractors. This additional capacity is not expected to be required for any of the scenarios.	Given there is no environmental benefit, any costs are disproportionate to the benefit gained.	No

#### 6.4.3.3 Improved Control Measures

##### Improved Control Measures considered

Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate cost	Implemented
Faster response/mobilisation time	No environmental benefit is identifiable due to the timeframes to contact.	It is feasible to preposition equipment and personnel in Dampier to allow a faster mobilisation time. However, response teams, trained personnel, contracted oil spill response service providers, government agencies and the associated mitigation equipment required to enact an initial response will be available for mobilisation within the first week. Additional equipment from existing stockpiles and oil spill response service providers can be on scene within 6 days.	Given there is no environmental benefit, any costs are disproportionate to the benefit gained.	No

#### 6.4.4 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional

- None selected
- Improved
  - None selected

## 6.5 Wildlife Response – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in **Section 5** with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

### 6.5.1 Existing Capability – Wildlife Response

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

### 6.5.2 Oiled Wildlife Response – Control measure options analysis

#### 6.5.2.1 Alternative Control Measures

Alternative Control Measures Considered				
<i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>				
Option considered	Environmental consideration	Feasibility	Approximate cost	Implemented
Direct contracts as 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	No

#### 6.5.2.2 Additional Control Measures

Additional Control Measures Considered				
<i>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</i>				
Option considered	Environmental consideration	Feasibility	Approximate cost	Implemented
Additional wildlife treatment systems	Current arrangements allow for all wildlife to be treated. Hydrocarbon is only limited to open water above the impact threshold. Therefore, there is no environmental benefit for having additional wildlife treatment systems as current capability meets the need.	Current arrangements allow response equipment and personnel to be delivered by day one, scaling up by day six, enough to treat up to 600 wildlife. An additional wildlife treatment system is feasible and would potentially reduce the time to deploy additional wildlife systems.	Given there is no environmental benefit, any costs are disproportionate to the benefit gained.	No
Additional trained wildlife responders	Current numbers meet the needs required and additional personnel are available through existing contracts with oil spill response organisations and environmental panel contractors. 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.	Providing additional trained wildlife responders is feasible, however current capacity provides the capacity to treat approximately 600 wildlife units (primarily avian fauna) by day six, with additional capacity available from OSRL.	Given there is no environmental benefit, any costs are disproportionate to the benefit gained.	No

#### 6.5.2.3 Improved Control Measures

Improved Control Measures considered				
<i>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</i>				
Option considered	Environmental consideration	Feasibility	Approximate cost	Implemented
Faster mobilisation time for wildlife response through pre-positioned equipment and personnel.	Response time is limited by specialist personnel mobilisation time. Current timing is sufficient considering there is no potential for shoreline receptors to be contacted.	The selected delivery options provide the capacity to mobilise an oiled wildlife response capable of treating up to 600 wildlife from at least day six and exceeds the estimated Level 4 OWR response thought to be applicable. This delivery option provides the maximum expertise pooled across the	The cost of having dedicated equipment and personnel available to respond faster is considered disproportionate to the environmental benefit.	No

	<p>This control measure provides increased effectiveness through faster mobilisation of specialists. However, no significant net environmental benefit is expected due to shoreline stranding times.</p>	<p>participating operators, backed up by the international resources provided by OSRL. The availability of vessels and personnel meets the response need.</p>		
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### 6.5.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected



## 6.6 Waste Management – ALARP Assessment

Alternative, Additional and Improved options have been identified and assessed against the base capability described in **Section 5** with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

### 6.6.1 Existing Capability – Waste Management

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, refuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

### 6.6.2 Waste Management – Control measure options analysis

#### 6.6.2.1 Alternative Control Measures

Alternative Control Measures Considered <i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>				
Option considered	Environmental consideration	Feasibility	Approx. cost	Implemented
No reasonably practical alternative control measures identified.				

#### 6.6.2.2 Additional Control Measures

Additional Control Measures Considered <i>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</i>				
Option considered	Environmental consideration	Feasibility	Approximate cost	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 contract and arrangements with OSRL. Existing arrangements meet identified need for the PAP.	The cost of having increased waste storage capability is considered disproportionate to the environmental benefit.	No

#### 6.6.2.3 Improved Control Measures

Improved Control Measures considered <i>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</i>				
Option considered	Environmental consideration	Feasibility	Approximate cost	Implemented
Faster response time	The access to Veolia waste storage options provides the resources to store and transport waste, permitting the wastes to be stockpiled and gradually processed within the regional waste handling facilities. Bulk transport to Veolia's licensed waste management facilities would be undertaken via controlled-waste-licensed vehicles and in accordance with Environmental Protection (Controlled Waste) Regulations 2004. The environmental benefit from successful waste storage will reduce pressure on the treatment and disposal facilities reducing ecological consequences by safely securing waste. In addition, waste storage 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.	Woodside already maintains an equipment stockpile in Exmouth to enable shorter response times to incidents. This stockpile includes temporary waste storage equipment. Woodside has access to stockpiles of waste storage and equipment in Dampier and Exmouth through existing contracts and arrangements.	The incremental benefit of having a dedicated local Woodside owned stockpile of waste equipment and transport is considered minor and cost is considered disproportionate to the benefit gained given predicted shoreline contact times.	No

### 6.6.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

## 6.7 Scientific Monitoring – ALARP Assessment

Alternative, additional and improved options have been identified and assessed against the base capability described in **Section 5** with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

### 6.7.1 Scientific monitoring – control measure options analysis

#### 6.7.1.1 Alternative Control Measures

Evaluate Alternative, Additional and Improved Control Measures					
Alternative Control Measures considered					
<i>Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control</i>					
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 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 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.

#### 6.7.1.2 Additional Control Measures

Additional Control Measures considered					
<i>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</i>					
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 an instantaneous MDO release 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 an instantaneous MDO release 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 an instantaneous marine diesel release from the PAP activities.

### 6.7.1.3 Improved control measures

**Improved control measures considered** – No reasonably practicable improved Control Measures identified.

### 6.7.2 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP:

- Alternative:
  - None selected.
- Additional:
  - Determine baseline data needs and provide implementation plan in the event of an unplanned hydrocarbon release.
- Improved:
  - None selected.

### 6.7.3 Operational plan

Key actions from the Scientific Monitoring Program Operational Plan for implementing the response are outlined in **Table 6-6**.

**Table 6-6: Scientific monitoring program operational plan actions**

Responsibility	Action
<b>Activation</b>	
CIMT Planning (CIMT Planning – Environment Unit)	Mobilises SMP Lead/Manager and SMP Coordinator to the CIMT Planning function.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	Constantly assesses all outputs from OM01, OM02 and OM03 ( <b>Section 5 and ANNEX B: Operational Monitoring Activation and Termination Criteria</b> ) to determine receptor locations and receptors at risk. Confirm sensitive receptors likely to be exposed to hydrocarbons, timeframes to specific receptor locations and which SMPs are triggered. Review baseline data for receptors at risk.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	SMP co-ordinator stands up SMP standby contractor as 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. Determines practicable baseline acquisition program based on predicted timescales to contact and anticipated SMP mobilisation times. Determines scope for preliminary post-contact surveys during the Response Phase. Determines which SMP activities are required at each location based on the identified receptor sensitivities.

Responsibility	Action
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, Standby Contractor, SMP Manager)	If response phase data acquisition is required, stand up the contractor SMP teams for data acquisition and instruct them to standby awaiting further details for mobilisation from the CIMT.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP Standby Contractor, SMP 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 Contractor, 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 Contractor SMP Manager and CIMT Logistics to establish mobilisation plan, secure logistics resources and establish ongoing logistical support operations, including: <ul style="list-style-type: none"> <li>• vessels, vehicles and other logistics resources</li> <li>• vessel fit-out specifications (as detailed in the SMP Operational Plan)</li> <li>• equipment storage and pick-up locations</li> <li>• personnel pick-up/airport departure locations</li> <li>• ports of departure</li> <li>• land based operational centres and forward operations bases accommodation and food requirements.</li> </ul>
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP Standby Contractor, SMP Manager)	Confirm communications procedures between Woodside SMP team, SMP Standby Contractor, SMP Manager, SMP Team Leads and Operations Coordinator (CIMT).
<b>Mobilisation</b>	
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 Standby Contractor, SMP Duty Manager to mobilise teams and equipment according to the logistics plan and Sector induction procedures.
SMP Survey Team Leads	SMP Survey Team Leader(s) coordinate on-ground/on-vessel mobilisations and support services with the Operations Coordinator (CIMT).

## 6.7.4 ALARP and Acceptability summary

ALARP and Acceptability Summary		
Scientific Monitoring		
<b>ALARP Summary</b>	X	All known reasonably practicable control measures have been adopted
	X	No additional, alternative and improved control measures would provide further benefit
		No reasonably practical additional, alternative, and/or improved control measure exists
<p>The resulting scientific monitoring capability has been assessed against the combined credible spill scenarios for Scarborough Seabed Intervention and Trunkline Installation activity. The range of strategies provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts.</p> <p>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.</p>		
<b>Acceptability Summary</b>	<ul style="list-style-type: none"> <li>• The control measures selected for implementation manage the potential impacts and risks to ALARP.</li> <li>• 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.</li> <li>• Throughout the PAP, relevant Australian standards and codes of practice will be followed to evaluate the impacts from an instantaneous marine diesel release.</li> <li>• The level of impact and risk to the environment has been considered with regard to the principles of Environmentally Sustainable Development; 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 combined credible spill scenarios for Scarborough Seabed Intervention and Trunkline Installation activity, and uncertainty has not been used as a reason for postponing control measures.</li> </ul>	
<p>On the basis from the impact assessment above and in Section 6 of the Scarborough Seabed Intervention and Trunkline Installation activity 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.</p>		

## 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 access in the nearshore environment
- Presence of personnel on the shoreline
- Human presence (manual cleaning)
- Additional stress or injury caused to wildlife
- Secondary contamination from the management of waste

### 7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

**Table 7-1: Analysis of risks and impacts**

	Environmental Value						
	Soil & Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/Habitat	Species	Socio-Economic
Monitor and evaluate		✓	✓		✓	✓	
Source control		✓	✓	✓	✓	✓	✓
Shoreline Protection & Deflection	✓	✓	✓		✓	✓	✓
Shoreline Clean-up	✓	✓	✓		✓	✓	✓
Oiled Wildlife					✓	✓	
Scientific Monitoring		✓	✓		✓	✓	✓
Waste Management	✓			✓	✓	✓	✓

### 7.3 Evaluation of impacts and risks from implementing response techniques *Vessel operations and anchoring*

During the implementation of response techniques, where water depths allow, it is possible response vessels will be required to anchor (e.g. during shoreline surveys). The use of vessel anchoring will be minimal and likely to occur when the impacted shoreline is inaccessible via road. Anchoring in the nearshore environment of sensitive receptor locations will have the potential to impact coral reef, seagrass beds and other benthic communities in these areas. Recovery of benthic communities from anchor damage depends on the size of anchor and frequency of anchoring. Impacts would be highly localised (restricted to the footprint of the vessel anchor and chain) and temporary, with full recovery expected.

#### ***Presence of personnel on the shoreline***

Presence of personnel on the shoreline during shoreline operations could potentially result in disturbance to wildlife and habitats. During the implementation of response techniques, it is possible personnel may have minimal, localised impacts on habitats, wildlife and coastlines. The impacts associated with human presence on shorelines during shoreline surveys may include:

- Damage to vegetation/habitat to gain access to areas of shoreline oiling;
- Damage or disturbance to wildlife during shoreline surveys;
- Removal of surface layers of intertidal sediments (potential habitat depletion); and
- Excessive removal of substrate causing erosion and instability of localised areas of the shoreline.

#### ***Human presence***

Human presence for manual clean-up operations may lead to the compaction of sediments and damage to the existing environment especially in sensitive locations such as mangroves and turtle nesting beaches. However, any impacts are expected to be localised with full recovery expected.

#### ***Additional stress or injury caused to wildlife***

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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.

### ***Waste generation***

Implementing the selected response techniques will result in the generation of the following waste streams that will require management and disposal:

- Liquids (recovered oil/water mixture), recovered from shoreline clean-up operations
- Semi-solids/solids (oily solids), collected during shoreline clean-up operations
- Debris (e.g. seaweed, sand, woods, plastics), collected during shoreline clean-up operations and oiled wildlife response.

If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination similar to that described above, impacts to wildlife through contact with or ingestion of waste materials and contamination risks if not disposed of correctly onshore.

## **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 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 (**ANNEX E**), and/or First Strike Plans.

### ***Vessel operations and access in the nearshore environment***

- If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified (Performance Standard (PS) 8.1, 11.1, 14.1)
- Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines (PS 11.2, 14.2)

### ***Presence of personnel on the shoreline***

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- Oversight by trained personnel who are aware of the risks (PS 14.6)
- Trained unit leader's brief personnel of the risks prior to operations (PS 14.7)

**Human Presence**

- Shoreline access route (foot, car, vessel and helicopter) with the least environmental impact identified will be selected by a specialist in shoreline contamination assessment techniques (SCAT) operations (PS 7.3, 14.5)
- Vehicular access will be restricted on dunes, turtle nesting beaches and in mangroves (PS 14.3)

**Additional stress or injury caused to wildlife**

- Operations conducted with advice from the DBCA Oiled Wildlife Advisor and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan (PS 16.3)

**Waste generation**

- All shoreline clean-up sites will be zoned and marked before clean-up operations commence (PS 12.4)
- Removal of vegetation will be limited to moderately or heavily oiled vegetation (PS 14.4).

## 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 :
  - 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 to 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. International Convention for the Prevention of Pollution from Ships (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 & 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 the potential to cause injury, ill health, damage to the environment, damage to equipment or assets or company reputation.
Major Environment Event	The events with potential environment, reputation, social or cultural consequences of category C or higher (as per Woodside's operational risk matrix) which are evaluated against credible worst-case scenarios which may occur when all controls are absent or have failed.
Performance outcome	A statement of the overall goal or outcome to be achieved by a control measure
Performance standard	The parameters against which [risk] controls are assessed to ensure they reduce risk to ALARP. A statement of the key requirements (indicators) that the control measure has to achieve in order to perform as intended in relation to its functionality, availability, reliability, survivability and dependencies.
Preparedness	Measures taken before an incident in order to improve the effectiveness of a response
Reasonably practicable	... a computation ... made by the owner, in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) [showing whether or not] that there is a gross disproportion between them ... made by the owner at a point of time anterior to the accident. (Judgement: Edwards v National Coal Board [1949])
Receptors at risk	Physical, biological and social resources identified as at risk from hydrocarbon contact using oil spill modelling predictions.
Receptor areas	Geographically referenced areas such as bays, islands, coastlines and/or protected area (World Heritage Area, WHA, Commonwealth or State marine reserve or park) containing one or more receptor type.
Receptor Sensitivities	This is a classification scheme to categorise receptor sensitivity to an oil spill. The Environmental Sensitivity Index (ESI) is a numerical classification of the relative sensitivity of a particular environment (particularly different shoreline types) to an oil spill. Refer to the Woodside Oil Pollution Emergency Arrangements (Australia) for more details.

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Term	Description / Definition
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	Measures taken in response to an event to reduce or prevent adverse consequences. Response techniques are selected to achieve an effective response that meets incident objectives. Response techniques are selected according to the specific conditions and environment of the event.
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 – $\geq 10 \text{ g/m}^2$ , dissolved – $\geq 100 \text{ ppb}$ and entrained hydrocarbon concentrations – $\geq 500 \text{ ppb}$ .
Zone of Application (ZoA)	The zone in which Woodside may elect to apply dispersant. The zone is determined based on a range of considerations, such as hydrocarbon characteristics, weathering and metocean conditions. The zone is a key consideration in the Net Environmental Benefit Analysis for dispersant use.

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## 11.2 Abbreviations

Abbreviation	Meaning
AHV	Anchor Handler Vessel
AIIMS	Australasian Inter-Service Incident Management System
ALARP	As low as reasonably practicable
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
API	American Petroleum Institute
APPEA	Australian Petroleum Production & Exploration Association
AUV	Autonomous Underwater Vehicle
BAOAC	Bonn Agreement Oil Appearance Code
BOPE	Blowout Preventer Equipment
CEDRE	Centre of Documentation, Research and Experimentation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIMT	Corporate Incident Management Team
CMT	Crisis Management Team
COP	Common Operating Picture
CS	Credible Scenario
DBCA	Department of Biodiversity, Conservation and Attractions (former Department of Parks and Wildlife)
DM	Duty Manager
DNA	Deoxyribonucleic Acid
DoT	Department of Transport
DP	Dynamically Positioned
EMBA	Environment that May Be Affected
EMSA	European Maritime Safety Agency
EP	Environment Plan
EPBC	Environment Protection and Biodiversity Conservation
EROD	ethoxyresorufin-O-deethylase
ESI	Environmental Sensitivity Index
ESD	Environmentally Sustainable Development
ESP	Environmental Services Panel
FSP	First Strike Plan
FST	Functional Support Team
GIS	Geographic Information System
GSI	Gonadosomatic Index
HSE	Health Safety and Environment
HSEQ	Health Safety Environment and Quality
HSP	Hydrocarbon Spill Preparedness
IAP	Incident Action Plan

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Abbreviation	Meaning
I&CM	Incident and Crisis Management
IC	Incident Controller
ICE	Internal Control Environment
ID	Identification
IGEM	Industry-Government Environmental Meta-database
IMIS	Incident Management Information System
IMS	Incident Management System
IMO	International Marine Organisation
IMT	Incident Management Team
IPIECA	International Petroleum Industry Environment Conservation Association
IR	Infrared
ISV	Infield Support Vessels
ITOPF	International Tanker Owners Pollution Federation
IUCN	International Union for Conservation of Nature
KBSB	King Bay Support Base
KGP	Karratha Gas Plant
LEL	Lower Explosive Limit
LSI	Liver Somatic Index
MARPOL	International Convention for the Prevention of Pollution from Ships
MoU	Memorandum of Understanding
MSRC	Marine Spill Response Corporation
NATA	National Association of Testing Authorities
NEBA	Net Environmental Benefit Analysis
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NRDA	Natural Resource Damage Assessment
NWBM	Non-Water Based Muds
OIE	Offset Installation Equipment
OILMAP	Oil Spill Model and Response System
OM	Operational Monitoring
OMP	Operational Monitoring Program
OPEA	Oil Pollution Emergency Arrangements
OPEP	Oil Pollution Emergency Plan
OPGGS	Offshore Petroleum and Greenhouse Gas Storage
OSPRMA	Oil Spill Preparedness and Response Mitigation Assessment
OSRL	Oil Spill Response Limited
OSRO	Oil Spill Response Organisation
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response

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Abbreviation	Meaning
OWRP	Oiled Wildlife Response Plan
OWROP	Oiled Wildlife Response Operational Plan
QA/QC	Quality Assurance/Quality Control
PAH	Polyaromatic Hydrocarbon
PAP	Petroleum Activities Program
PBA	Pre-emptive Baseline Areas
PPB	Parts per billion
PS	Performance Standard
PS&BR	Property, Security and Business Resilience
ROV	Remotely Operated Vehicle(s)
RPA	Response Protection Area
S&EM	Security and Emergency Management
SCAT	Shoreline Contamination Assessment Techniques
SDH	Sorbitol Dehydrogenase
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous Operations
SME	Subject Matter Expert
SMP	Scientific Monitoring Program
SOPEP	Ship Oil Pollution Emergency Plan
SPD	Shoreline Protection and Deflection
SQGV	Sediment Quality Guideline Values
TOA	Testing of Arrangements
TRP	Tactical Response Plan
TRSV	Tubing Retrievable Safety Valve
TSS	Total Suspended Solids
UV	Ultraviolet
WA DoT	Western Australia Department of Transport
WBM	Water Based Muds
WCCS	Worst Case Credible Scenario
WHA	World Heritage Area
WMS	Woodside Management System
WiRCs	Woodside Integrated Risk & Compliance System
WEL/ Woodside	Woodside Energy Limited
WWCI	Wild Well Control Inc
ZoA	Zone of Application

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## **ANNEX A: NET ENVIRONMENTAL BENEFIT ANALYSIS DETAILED OUTCOMES**

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A NEBA has been conducted to assess the net environmental benefit of different response techniques to selected receptors in the event of an oil spill from the PAP for marine diesel (representing platform surface release during operations). The locations utilised for the NEBA were limited to the identified RPAs of the PAP identified from modelling. These include receptors which have potential for the following:

- Surface contact (>50 g/m<sup>2</sup>)
- Shoreline accumulation (100 g/m<sup>2</sup>)
- Entrained contact (>100 ppb and <14 days)

The detailed NEBA assessment outcomes are available via this [Link](#).

**Table A-1: NEBA assessment technique recommendations for marine diesel**

Receptor	Contact	Monitor and Evaluate	Source control via vessel SOPEP	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Mechanical dispersion	In situ burning	Containment and Recovery	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled Wildlife Response
Open Commonwealth waters (Operational Area)	>50 g/m <sup>2</sup> surface >100 ppb entrained	Yes	Yes	No	No	No	No	No	No	No	No	Yes
Dampier Archipelago	>100 g/m <sup>2</sup> shoreline >50 g/m <sup>2</sup> surface >100 ppb entrained	Yes	Yes	No	No	No	No	Yes	Yes	No	No	Yes
Muiron Islands, Muiron Islands MMA-WHA	>100 ppb entrained	Yes	Yes	No	No	No	No	Potentially	Potentially	No	No	Yes
Pilbara - Middle Pilbara – Islands & Shoreline	>100 ppb entrained	Yes	Yes	No	No	No	No	Potentially	Potentially	No	No	Yes
Pilbara Islands – Southern Island Group	>100 ppb entrained	Yes	Yes	No	No	No	No	Potentially	Potentially	No	No	Yes
Montebello Marine Park	>100 ppb entrained	Yes	Yes	No	No	No	No	Potentially	No	No	No	Yes
Montebello State Marine Park	>100 ppb entrained	Yes	Yes	No	No	No	No	No	No	No	No	Yes
Montebello Islands	>100 ppb entrained	Yes	Yes	No	No	No	No	Potentially	Potentially	No	No	Yes
Dampier Marine Park	>100 ppb entrained	Yes	Yes	No	No	No	No	No	No	No	No	Yes
Gascoyne Marine Park	>100 ppb entrained	Yes	Yes	No	No	No	No	No	No	No	No	Yes
Barrow Island	>100 ppb entrained	Yes	Yes	No	No	No	No	Potentially	Potentially	No	No	Yes
Ningaloo Coast North and WHA, Ningaloo RUZ	>100 ppb entrained	Yes	Yes	No	No	No	No	Potentially	Potentially	No	No	Yes
Rankin Bank	>100 ppb entrained	Yes	Yes	No	No	No	No	No	No	No	No	Yes
Lowendal Islands	>100 ppb entrained	Yes	Yes	No	No	No	No	Potentially	Potentially	No	No	Yes

**Overall assessment**

Sensitive receptor (Sites identified in EP)	Monitor and Evaluate	Source control via vessel SOPEP	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Mechanical dispersion	In situ burning	Containment and Recovery	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled Wildlife Response
Is this response Practicable?	Yes	Yes	No	No	No	No	Potentially	Potentially	No	No	Yes
NEBA identifies Response potentially of Net Environmental Benefit?	Yes	Yes	No	No	No	No	Potentially	Potentially	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 <sup>16</sup>		Potential duration of impact	Equivalent Woodside Corporate Risk Matrix Consequence Level
Positive	3P	Major	Likely to prevent: <ul style="list-style-type: none"> <li>behavioural impact to biological receptors</li> <li>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.</li> </ul>	Decrease in duration of impact by > 5 years	N/A
	2P	Moderate	Likely to prevent: <ul style="list-style-type: none"> <li>significant impact to a single phase of reproductive cycle of biological receptors</li> <li>detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors.</li> </ul>	Decrease in duration of impact by 1–5 years	N/A
	1P	Minor	Likely to prevent impacts on: <ul style="list-style-type: none"> <li>significant proportion of population or breeding stages of biological receptors</li> <li>socio-economic receptors such as:                                     <ul style="list-style-type: none"> <li>significant impact to the sensitivity of protective designation; or</li> <li>significant and long-term impact to business/industry.</li> </ul> </li> </ul>	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: <ul style="list-style-type: none"> <li>behavioural impact to biological receptors</li> <li>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.</li> </ul> <b>[Note 1]</b>	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: <ul style="list-style-type: none"> <li>significant impact to a single phase of reproductive cycle for biological receptors; or</li> <li>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.</li> </ul>	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: <ul style="list-style-type: none"> <li>significant proportion of population or breeding stages of biological receptors</li> <li>socio-economic receptors resulting in either:                                     <ul style="list-style-type: none"> <li>significant impact to the sensitivity of protective designation; or</li> <li>significant and long-term impact to business/industry.</li> </ul> </li> </ul>	Increase in duration of impact by > 5 years or unrecoverable	Increase in risk by two categories (e.g. Minor (E) to Major (A))

<sup>16</sup> NOTE: the maximum likely impact should be considered; for example, if a spill were to directly impact the behaviour that results in an impact to reproduction and/or the breeding population (such as fish failing to aggregate to spawn), then the score should be a 2 or 3 rather than a 1. Similarly, if a change in behaviour resulted in an increased risk of mortality of a population, then it should be scored as a 2 or 3

## ANNEX B: OPERATIONAL MONITORING ACTIVATION AND TERMINATION CRITERIA

**Table B-1: Operational monitoring objectives, triggers and termination criteria**

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
<p><b>Operational Monitoring Operational Plan 1 (OM01)</b></p> <p>Predictive Modelling of Hydrocarbons to Assess Resources at Risk</p>	<p>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.</p> <p>The objectives of OM01 are to:</p> <ul style="list-style-type: none"> <li>• Provide forecasting of the movement and weathering of spilled hydrocarbons</li> <li>• Identify resources that are potentially at risk of contamination</li> <li>• 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</li> </ul>	<p>OM01 will be triggered immediately following a level 2/3 hydrocarbon spill.</p>	<p>The criteria for the termination of OM01 are:</p> <ul style="list-style-type: none"> <li>• The hydrocarbon discharge has ceased</li> <li>• Response activities have ceased</li> <li>• Hydrocarbon spill modelling (as verified by OM02 surveillance observations) predicts no additional natural resources will be impacted</li> </ul>
<p><b>Operational Monitoring Operational Plan 2 (OM02)</b></p> <p>Surveillance and reconnaissance to detect hydrocarbons and resources at risk</p>	<p>OM02 aims to provide regular, on-going hydrocarbon spill surveillance throughout a broad region, in the event of a spill.</p> <p>The objectives of OM02 are:</p> <ul style="list-style-type: none"> <li>• Verify spill modelling results and recalibrate spill trajectory models (OM01)</li> <li>• Understand the behaviour, weathering and fate of surface hydrocarbons</li> <li>• Identify environmental receptors and locations at risk or contaminated by hydrocarbons</li> <li>• Inform ongoing Net Environmental Benefit Analysis (NEBA) and continually assess the efficacy of available response options in order to reduce risks to ALARP</li> <li>• 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.</li> </ul>	<p>OM02 will be triggered immediately following a level 2/3 hydrocarbon spill.</p>	<p>The termination triggers for the OM02 are:</p> <ul style="list-style-type: none"> <li>• 72 hours has elapsed since the last confirmed observation of surface hydrocarbons</li> <li>• Latest hydrocarbon spill modelling results (OM01) do not predict surface exposures at visible levels</li> </ul>

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Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
<p><b>Operational Monitoring Operational Plan 3 (OM03)</b></p> <p>Monitoring of hydrocarbon presence, properties, behaviour and weathering in water</p>	<p>OM03 will measure surface, entrained and dissolved hydrocarbons in the water column to inform decision-making for spill response activities.</p> <p>The specific objectives of OM03 are as follows:</p> <ul style="list-style-type: none"> <li>• Detect and monitor for the presence, quantity, properties, behaviour and weathering of surface, entrained and dissolved hydrocarbons</li> <li>• Verify predictions made by OM01 and observations made by OM02 about the presence and extent of hydrocarbon contamination</li> </ul> <p>Data collected in OM03 will also be used for the purpose of longer-term water quality monitoring during SM01.</p>	<p>OM03 will be triggered immediately following a level 2/3 hydrocarbon spill.</p>	<p>The criteria for the termination of OM03 are as follows:</p> <ul style="list-style-type: none"> <li>• The hydrocarbon release has ceased</li> <li>• Response activities have ceased</li> <li>• Concentrations of hydrocarbons in the water are below available ANZECC/ ARMCANZ (2000) trigger values for 99% species protection.</li> </ul>
<p><b>Operational Monitoring Operational Plan 4 (OM04)</b></p> <p>Pre-emptive assessment of sensitive receptors at risk</p>	<p>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.</p> <p>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.</p> <p>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.</p>	<p>Triggers for commencing OM04 include:</p> <ul style="list-style-type: none"> <li>• Contact of a sensitive habitat or shoreline is predicted by OM01, OM02 and/or OM03</li> <li>• 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)</li> </ul>	<p>The criteria for the termination of OM04 at any given location are:</p> <ul style="list-style-type: none"> <li>• Locations predicted to be contacted by hydrocarbons have been contacted</li> <li>• The location has not been contacted by hydrocarbons and is no longer predicted to be contacted by hydrocarbons (resources should be reallocated as appropriate)</li> </ul>

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Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
<p><b>Operational monitoring operational plan 5 (OM05)</b></p> <p>Monitoring of contaminated resources</p>	<p>OM05 aims to implement surveys to assess the condition of fauna and habitats contacted by hydrocarbons at sensitive habitat and shoreline locations.</p> <p>The primary objectives of OM05 are:</p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p>Indirectly, the information collected by OM05 may also support the assessment of environmental impacts, as determined through subsequent SMPs.</p>	<p>OM05 will be triggered when a sensitive habitat or shoreline is predicted to be contacted by hydrocarbons by OM01, OM02 and/or OM03.</p>	<p>The criteria for the termination of OM05 at any given location are:</p> <ul style="list-style-type: none"> <li>No additional response or clean-up of fauna or habitats is predicted</li> <li>Spill response and clean-up activities have ceased</li> </ul> <p>OM05 survey sites established at sensitive habitat and shoreline locations will continue to be monitored during SM02.</p> <p>The formal transition from OM05 to SM02 will begin on cessation of spill response and clean-up activities.</p>

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## 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**

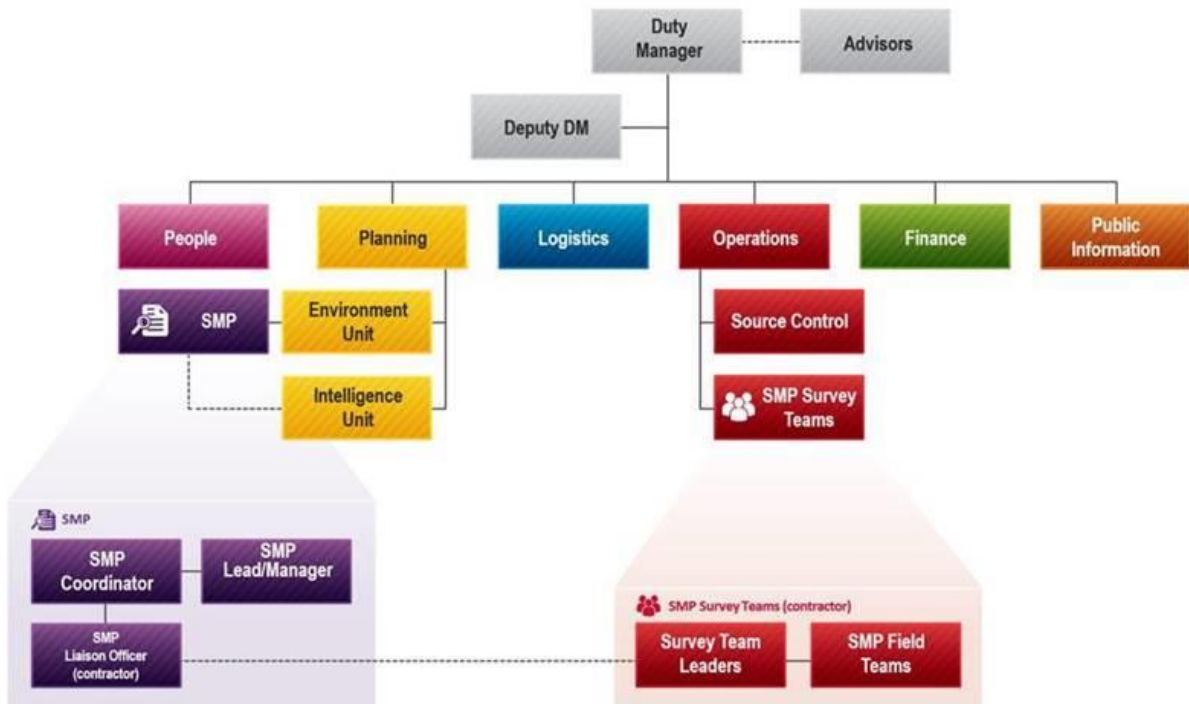
Role	Location	Responsibility
<b>Woodside Roles</b>		
SMP Lead/Manager	Onshore	<ul style="list-style-type: none"> <li>• Approves activated the SMPs based on operational monitoring data provided by the Planning Function</li> <li>• Provides advice to the CIMT in relation to scientific monitoring</li> <li>• Provides technical advice regarding the implementation of scientific monitoring</li> <li>• Approves detailed sampling plans prepared for SMPs</li> <li>• Directs liaison between statutory authorities, advisors and government agencies in relation to SMPs.</li> </ul>
SMP Co-Ordinator	Onshore	<ul style="list-style-type: none"> <li>• Activates the SMPs based on operational monitoring data provided by the Planning Function</li> <li>• Sits in the Planning function of the CIMT.</li> <li>• 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</li> <li>• Manages the Environmental Service Provider’s implementation of the SMPs</li> <li>• Liaises with the Environmental Service Provider on delivery of the SMPs</li> <li>• Arranges all contractual matters, on behalf of Woodside, associated with the Environmental Service Provider’s delivery of the SMPs.</li> </ul>

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Role	Location	Responsibility
<b>Environmental Service Provider Roles</b>		
SMP standby contractor: SMP Duty Manager/Project Manager	Onshore	<ul style="list-style-type: none"> <li>• Coordinates the delivery of the SMPs</li> <li>• Provides costings, schedule and progress updates for delivery of SMPs</li> <li>• Determines the structure of the Environmental Service Provider's team to necessitate delivery of the SMPs</li> <li>• Verifies that HSE Plans, detailed sampling plans and other relevant deliverables are developed and implemented for delivery of the SMPs</li> <li>• Directs field teams to deliver SMPs</li> <li>• Arranges all contractual matters, on behalf of Environmental Service Provider, associated with the delivery of the SMPs to Woodside</li> <li>• Manages sub-consultant delivery to Woodside</li> <li>• Provides required personnel and equipment to deliver the SMPs</li> </ul>
SMP Field Teams	Offshore – Monitoring Locations	<ul style="list-style-type: none"> <li>• Delivers the SMPs in the field consistent with the detailed sampling plans and HSE requirements, within time and budget.</li> <li>• Early communication of time, budget, HSE risks associated with delivery of the SMPs to the Environmental Service Provider – Project Manager</li> <li>• Provides start up, progress and termination updates to the Environmental Service Provider – Project Manager (will be led in-field by a party chief).</li> </ul>

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**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
<b>Scientific monitoring program 1 (SM01)</b> <b>Assessment of Hydrocarbons in Marine Waters</b>	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: <ul style="list-style-type: none"> <li>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</li> <li>Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs.</li> </ul>	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: <ul style="list-style-type: none"> <li>Operational monitoring data relating to observations and / or measurements of hydrocarbons on and in water have been compiled, analysed and reported; and</li> <li>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.</li> </ul> SMP monitoring of sensitive receptor sites: <ul style="list-style-type: none"> <li>Concentrations of hydrocarbons in water samples are below NOPSEMA guidance note (2019<sup>17</sup>) concentrations of 1 g/m<sup>2</sup> for floating, 10 ppb for entrained and dissolved; and</li> <li>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.</li> </ul>
<b>Scientific monitoring program 2 (SM02)</b> <b>Assessment of the Presence, Quantity and Character of Hydrocarbons in Marine Sediments</b>	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: <ul style="list-style-type: none"> <li>Determine the extent, severity and persistence of hydrocarbons in marine sediments across selected sites where hydrocarbons were observed or recorded during operational monitoring; and</li> <li>Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs.</li> </ul>	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: <ul style="list-style-type: none"> <li>Response activities have ceased; and</li> <li>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/m<sup>2</sup> surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m<sup>2</sup> for shoreline accumulation).</li> </ul>	SM02 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: <ul style="list-style-type: none"> <li>Concentrations of hydrocarbons in sediment samples are below ANZECC/ ARMCANZ (2013<sup>18</sup>) sediment quality guideline values (SQGVs) for biological disturbance; and</li> <li>Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in sediments have been documented.</li> </ul>
<b>Scientific monitoring program 3 (SM03)</b> <b>Assessment of Impacts and Recovery of Subtidal and Intertidal Benthos</b>	The objectives of SM03 are: <ul style="list-style-type: none"> <li>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</li> <li>Determine the impact of the hydrocarbon spill and subsequent recovery (including impacts associated with the implementation of response options).</li> </ul> Categories of intertidal and subtidal habitats that may be monitored include: <ul style="list-style-type: none"> <li>Coral reefs</li> <li>Seagrass</li> <li>Macro-algae</li> <li>Filter-feeders</li> </ul> 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: <ul style="list-style-type: none"> <li>As part of a pre-emptive assessment of PBAs of receptor locations identified by time to hydrocarbon contact &gt;10 days, to target receptors and sites where it is possible to acquire pre-hydrocarbon contact baseline; and</li> <li>Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m<sup>2</sup> surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m<sup>2</sup> for shoreline accumulation) for subtidal and intertidal benthic habitat.</li> </ul>	SM03 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: <ul style="list-style-type: none"> <li>Overall impacts to benthic habitats from hydrocarbon exposure have been quantified.</li> <li>Recovery of impacted benthic habitats has been evaluated.</li> <li>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.</li> </ul>
<b>Scientific monitoring program 4 (SM04)</b> <b>Assessment of Impacts and Recovery of Mangroves / Saltmarsh</b>	The objectives of SM04 are: <ul style="list-style-type: none"> <li>Characterize the status of mangroves (and associated salt marsh habitat) at shorelines exposed/contacted by spilled hydrocarbons;</li> <li>Quantify any impacts to species (abundance and density) and mangrove/saltmarsh community structure; and</li> <li>Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options).</li> </ul> SM04 will be supported by sediment sampling undertaken in SM02 and characteristics of the spill derived from OMPs.	SM04 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: <ul style="list-style-type: none"> <li>As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact &gt;10 days; and</li> <li>Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m<sup>2</sup> surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m<sup>2</sup> for shoreline accumulation) for mangrove/saltmarsh habitat.</li> </ul>	SM04 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: <ul style="list-style-type: none"> <li>Impacts to mangrove and saltmarsh habitat from hydrocarbon exposure have been quantified.</li> <li>Recovery of impacted mangrove/saltmarsh habitat has been evaluated.</li> </ul>

<sup>17</sup> NOPSEMA (2019) Bulletin #1 – Oil spill modelling – April 2019, <https://www.nopsema.gov.au/assets/Bulletins/A652993.pdf>

<sup>18</sup> 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
<b>Scientific monitoring program 5 (SM05) Assessment of Impacts and Recovery of Seabird and Shorebird Populations</b>	<p>The Objectives of SM05 are to:</p> <ul style="list-style-type: none"> <li>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</li> <li>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.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact &gt;10 days;</li> <li>Operational monitoring predicts shoreline contact of hydrocarbons (at or above 0.5 g/m<sup>2</sup> surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m<sup>2</sup> for shoreline accumulation) at important bird colonies / staging sites / important coastal wetland locations; or</li> <li>Records of dead, oiled or injured bird species made during the hydrocarbon spill or response.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul> <p>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:</p> <ul style="list-style-type: none"> <li>Impacts to seabird and shorebird populations from hydrocarbon exposure have been quantified.</li> <li>Recovery of impacted seabird and shorebird populations has been evaluated.</li> <li>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.</li> </ul>
<b>Scientific monitoring program 6 (SM06) Assessment of Impacts and Recovery of Nesting Marine Turtle Populations</b>	<p>The objectives of SM06 are to:</p> <ul style="list-style-type: none"> <li>To quantify impacts of hydrocarbon exposure or contact on marine turtle nesting populations (including impacts associated with the implementation of response options);</li> <li>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</li> <li>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).</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact &gt;10 days;</li> <li>Predicted shoreline contact of hydrocarbons (at or above 0.5 g/m<sup>2</sup> surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m<sup>2</sup> for shoreline accumulation) at known marine turtle rookery locations; or</li> <li>Records of dead, oiled or injured marine turtle species made during the hydrocarbon spill or response.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>Impacts to nesting marine turtle populations from hydrocarbon exposure have been quantified.</li> <li>Recovery of impacted nesting marine turtle populations has been evaluated.</li> <li>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.</li> </ul>
<b>Scientific monitoring program 7 (SM07) Assessment of Impacts to Pinniped Colonies including Haul-out Site Populations</b>	<p>The objectives of SM07 are to:</p> <ul style="list-style-type: none"> <li>Quantify impacts on pinniped colonies and haul-out sites as a result of hydrocarbon exposure/contact.</li> <li>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.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact &gt;10 days;</li> <li>Identified shoreline contact of hydrocarbons ((at or above 0.5 g/m<sup>2</sup> surface, ≥5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m<sup>2</sup> for shoreline accumulation) at known pinniped colony or haul-out site(s) (i.e. most northern site is the Houtman Abrolhos Islands); or</li> <li>Records of dead, oiled or injured pinniped species made during the hydrocarbon spill or response.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>Impacts to pinniped populations from hydrocarbon exposure have been quantified.</li> <li>Recovery of pinniped populations has been evaluated.</li> <li>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.</li> </ul>
<b>Scientific monitoring program 8 (SM08) Desk-Based Assessment of Impacts to Other Non-Avian Marine Megafauna</b>	<p>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:</p> <ul style="list-style-type: none"> <li>Cetaceans;</li> <li>Dugongs;</li> <li>Whale sharks and other shark and ray populations;</li> <li>Sea snakes; and</li> <li>Crocodiles.</li> </ul>	<p>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.</p>	<p>SM08 will be terminated when the results of the post-spill monitoring have quantified impacts to non-avian megafauna.</p> <ul style="list-style-type: none"> <li>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.</li> </ul>

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
	The desk-based assessment will include population analysis to infer potential impacts to marine megafauna species populations.		
<b>Scientific monitoring program 9 (SM09)</b> <b>Assessment of Impacts and Recovery of Marine Fish associated with SM03 habitats</b>	The objectives of SM09 are: <ul style="list-style-type: none"> <li>• Characterise the status of resident fish populations associated with habitats monitored in SM03 exposed/contacted by spilled hydrocarbons;</li> <li>• Quantify any impacts to species (abundance, richness and density) and resident fish population structure (representative functional trophic groups); and</li> <li>• Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options).</li> </ul>	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 <ul style="list-style-type: none"> <li>• 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.</li> </ul>
<b>Scientific monitoring program 10 (SM10)</b> <b>SM10 - Assessment of physiological impacts important fish and shellfish species (fish health and seafood quality/safety) and recovery</b>	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: <ul style="list-style-type: none"> <li>• Liver Detoxification Enzymes (ethoxyresorufin-O-deethylase (EROD) activity)</li> <li>• PAH Biliary Metabolites</li> <li>• Oxidative DNA Damage</li> <li>• Serum SDH</li> <li>• 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.</li> <li>• Seafood tainting may be included (where appropriate) using applicable sensory tests to objectively assess targeted finfish and shellfish species for hydrocarbon contamination.</li> </ul> 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: <ul style="list-style-type: none"> <li>• The hydrocarbon spill will or has intersected with active commercial fisheries or aquaculture activities.</li> <li>• Commercially targeted finfish and/or shellfish mortality has been observed/recorded.</li> <li>• Commercial fishing or aquaculture areas have been exposed to hydrocarbons (<math>\geq 0.5</math> g/m<sup>2</sup> surface and <math>\geq 5</math> ppb for entrained/dissolved hydrocarbons); and</li> <li>• Taste, odour or appearance of seafood presenting a potential human health risk is observed.</li> </ul>	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: <ul style="list-style-type: none"> <li>• Physiological impacts to important commercial fish and shellfish species from hydrocarbon exposure have been quantified.</li> <li>• Recovery of important commercial fish and shellfish species from hydrocarbon exposure has been evaluated.</li> <li>• 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.</li> <li>• 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.</li> </ul>

## 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 Environment Protection and Biodiversity Conservation (EPBC) Act) potentially exposed to hydrocarbons. With the first 24-48 hours of a spill event, such information will be sourced and evaluated as part of the SMP planning process guided by Appendix D (identified receptors vulnerable to hydrocarbon contact), the information presented in the Existing Environment section of the EP as well as other information sources such as the Woodside Baseline Environmental Studies Database.

The starting point for decision-making on what SMPs are activated and spatial extent of monitoring activities will be based on the predictive modelling results (OM01) in the first 24-48 hours until more information is made available from other operational monitoring activities such as aerial surveillance and shoreline surveys. Pre-emptive Baseline Areas (WHA, CMRs and State Marine Parks encompassing key ecological and socio-economic values) are a key focus of the SMP activation decision-making process, particularly, in the early spill event/response phase. As the operational monitoring progresses and further situational awareness information becomes available, it will be possible to understand the nature and scale of the spill. The SMP activation and implementation decision-making will be revisited on a daily basis to account for the updates on spill information. One of the priority focus areas in the early phase of the incident will be to identify and execute pre-emptive SMP assessments at key receptor locations, as required. The SMP activation and implementation decision tree is presented in Figure C-2.

### *Scientific monitoring Program Termination*

The basis of the termination process for the active SMPs (SMPs 1-10) will include quantification of impacts, evaluation of recovery for the receptor at risk and consultation with relevant authorities, persons and organisations. Termination of each SMP will not be considered until the results (as presented in annual SMP reports for the duration of each program) indicate that the target receptor has returned to pre-spill condition.

Once the SMP results indicate impacted receptor(s) have returned to pre-spill condition (as identified by Woodside) a termination decision-making process will be triggered and a number of steps will be undertaken as follows:

- Woodside will engage expert opinion on whether the receptor has returned to pre-spill condition (based on monitoring data). Subject Matter Expert (SMEs) will be engaged (via the Woodside SME scientific monitoring terms of reference to review program outcomes, provide expert advice and recommendations for the duration of each SMP.
- Where expert opinion agrees that the receptor has returned to pre-spill condition, findings will then be presented to the relevant authorities, persons and organisations (as defined by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulation 11A). Stakeholder identification, 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, persons/ organisations 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 persons/ organisations objections. The final report following termination will include: monitoring results, expert opinion and consultation including merits of any objections.
- Termination of SMPs will also consider applicable management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), CMRs, State Marine Parks, other protected area designations (e.g., State nature reserves) and Matters of National Environmental Significance (including listed species under part 3 of the EPBC Act).

The SMP termination decision-making process will be applied to each active SMP and an iterative process of decision steps continued until each SMP has been terminated (refer to decision-tree diagram for SMP termination criteria, Figure C-3).



# SMP ACTIVATION & IMPLEMENTATION DECISION PROCESS

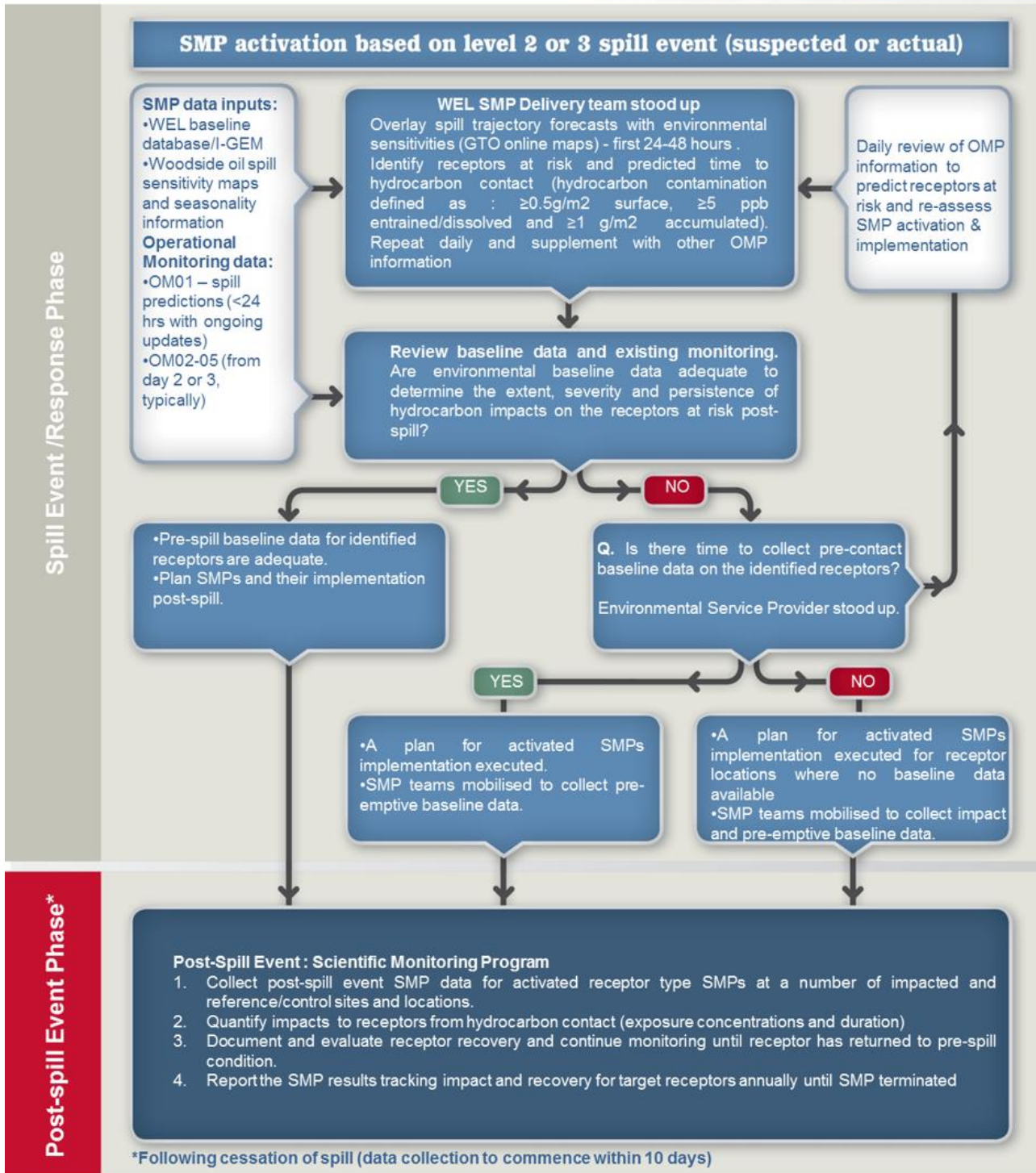


Figure C-2: Activation and Implementation Decision-tree for Oil Spill Environmental Monitoring

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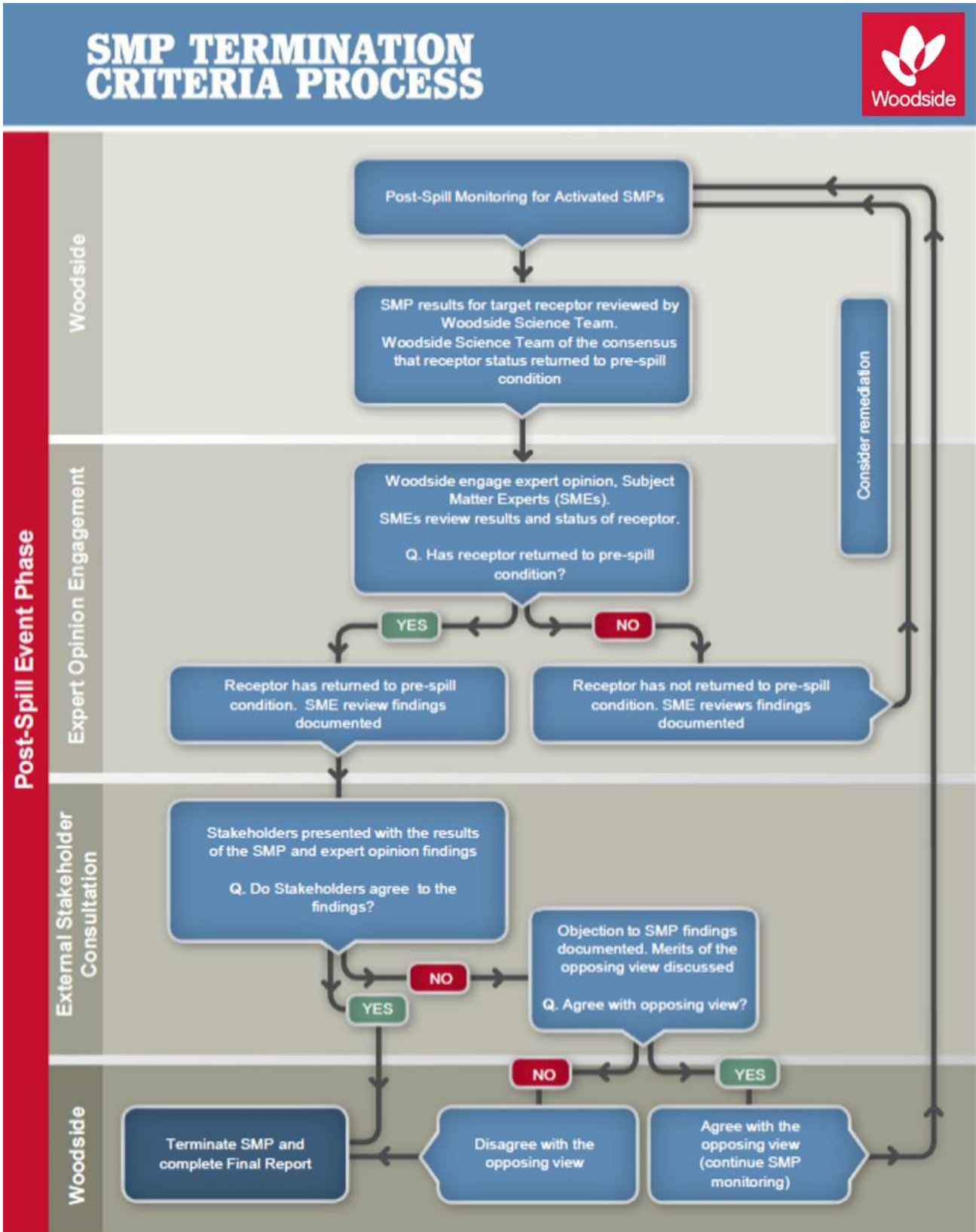


Figure C-3: Termination Criteria Decision-tree for Oil Spill Environmental Monitoring

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## 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)<sup>19</sup> in 2020. The Index of Marine Surveys for Assessments (IMSA) is an online portal for information about marine-based environmental surveys in Western Australia. IMSA is a project of the Department of Water and Environmental Regulation (the department) for the systematic capture and sharing of marine data created as part of an environmental impact assessment (EIA).

In the event of an unplanned hydrocarbon release, Woodside intends to interrogate the information on baseline studies status as held by the various databases (e.g. Woodside Environmental Knowledge Management System, IMSA and other sources of existing baseline data) to identify Pre-emptive Baseline Areas (PBAs), i.e., receptors at risk where hydrocarbon contact is predicted to be >10 days, and baseline data can be collected before hydrocarbon contact.

## Reporting

For the scientific monitoring program relevant regulators will be provided with:

- Annual reports summarising the SMPs deployed and active, data collection activities and available findings; and
- Final reports for each SMP summarising the quantitative assessment of environmental impacts and recovery of the receptor once returned to pre-spill condition and termination of the monitoring program.

The reporting requirements of the scientific monitoring program will be specific to the individual SMPs deployed and terms of responsibilities, report templates, schedule, Quality Assurance/Quality Control (QA/QC) and peer-review will be agreed with the contractors engaged to conduct the SMPs. Compliance and auditing mechanisms will be incorporated into the reporting terms.

<sup>19</sup> <https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort>

## **ANNEX D: MONITORING PROGRAM AND BASELINE STUDIES FOR THE PETROLEUM ACTIVITIES PROGRAM**

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**Table D-1: Oil Spill Environmental Monitoring – scientific monitoring program scope for the Petroleum Activities Program based on Worst Case Credible Spill EMBA (based three modelled marine diesel scenarios)**

Receptors to be Monitored	Receptor Areas - Potential Impact and Reference Scientific Monitoring Sites (marked X)																																																				
	Applicable SMP	Kimberley AMP	Agro-Rowley Terrace AMP	Montebello AMP	Dampier AMP	Carnarvon Canyon AMP	Ningaloo AMP	Gascoyne AMP	Shark Bay Open Ocean (including AMP)	Abrolhos AMP	Jurien AMP	Two Rocks AMP	Perth Canyon AMP	Geographe AMP	South-west Corner AMP	Ashmore Reef and AMP	Seringapatam Reef	Scott Reef (North and South)	Mermaid Reef and AMP	Clerke Reef and State Marine Park	Imperieuse Reef and State Marine Park	Rankin Bank	Glomar Shoals	Rowley Shoals (including Sate Marine 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 – Middle and 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)	Dampier Archipelago												
<b>Habitat</b>																																																					
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	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	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	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	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	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	X	X	X	X	X	X	X			
<b>Species</b>																																																					
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	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	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	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		
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	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	
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	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	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	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	X	X	X	X	X	X	X	X	X	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	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	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Socio-economic</b>																																																					
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	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	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Receptor areas identified as Pre-emptive Baseline Areas (based on criteria of surface contact and/or entrained hydrocarbon contact ≤10 days (Offshore Australian Marine Parks contacted by hydrocarbons in this timeframe also noted)

Receptor areas identified as Pre-emptive Baseline Areas in the response phase >10 days (based on criteria of surface contact and/or entrained hydrocarbon contact >10 days)

Receptor areas that may be identified as impact or reference sites in the event of major hydrocarbon release and would be identified as part of the SMP planning process

**Table D-2: Baseline Studies for the SMPs applicable to identified Pre-emptive Baseline Areas for the Petroleum Activities Program**

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
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.	<b>Studies:</b> 1. Glomar Shoal and Rankin Bank Environmental Survey Report, 2013, quantitatively surveyed benthic habitats and communities. AIMS report to Woodside. Scientific Publication - Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems, 2018. 2. Rankin Bank Environmental Survey Extension, 2014, Habitat assessment of an area southeast of Rankin Bank. 3. Glomar Shoal and Rankin Bank surveys, 2017. GWF-2 Monitoring Programme. Quantitatively surveyed benthic habitats and communities. 4. Temporal Studies survey of Rankin Bank and Glomar Shoal, 2018.	1. Broad benthic habitat classifications and habitat maps for the Montebello islands by DBCA. 2. Coral monitoring at sites across Barrow Island, Lowendal and the Montebello islands. Most recent survey 2012 3. Benthic community monitoring as part of DBCA Western Australian Marine Monitoring Program (2015-ongoing). 4. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013).	1. Chevron LTM of corals for the Gorgon Gas Development. Marine Baseline Program (2008), Marine Monitoring Program (2010) Post Development Surveys (2011 – 2013). 2. Coral monitoring at sites around Barrow Island, Lowendal and the Montebello islands. Most recent survey 2012. 3. Benthic community (coral, seagrass and macroalgae) monitoring as part of DBCA's Western Australian Marine Monitoring Program (2015-ongoing). 4. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013).	1. Benthic habitats surrounding the Lowendal Islands for the Gorgon Gas Development. Coral assemblages on the eastern side of Double Island, and coral bommies on the south-western edge of the Lowendal Shelf. 2. Coral monitoring at sites across Barrow Island, Lowendal and the Montebello islands. Most recent survey 2012. 3. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013).	1. Benthic habitat mapping of the subtidal and intertidal habitats of the islands and shoals. Coral communities in shallow subtidal habitat, intertidal pavement. 2. Coral monitoring at Varanus and Airlie Islands (2000 to present) to identify corals, growth from and percentage cover 3. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013; 2016)	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.	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.	1. Coral Monitoring, Mermaid Sound. URS on behalf of Chevron, 2004. 2. Pluto baseline marine habitat surveys 2007 – 2008. 3. Pluto dredge and post dredge monitoring 2008-2010. 4. Benthic habitat survey at the Eastern Flank Development area commissioned by Woodside. 5. Benthic community monitoring as part of DBCA's Dampier Archipelago Marine Monitoring Program (2007-ongoing). 6. WA Museum study on the Scleractinian corals collected in 1998. (Griffith 2004). 7. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013). 8. Coral recruitment in the Northern Pilbara (2015 and 2016). 9. Distribution, patterns and key processes of major marine communities and large marine fauna – DBCA Pluto Offset Program (of the proposed Dampier Archipelago Marine Park and Cape Preston Marine Management Area). 10. Establishment of long-term monitoring reference sites in the Pluto Offset program with DBCA (proposed Dampier Archipelago Marine Park and Cape Preston Marine Management Area). 11. Study of the spatial and temporal distribution of coral assemblages at Dampier Archipelago (Cape Preston to Delambre Island), using 871 datasets dating back to the early 1970s. Sites surveyed in May 2017.
		<b>Methods:</b>							

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
		<ol style="list-style-type: none"> <li>1. Towed video transects, photo quadrats using towed video system.</li> <li>2. Towed video transects, photo quadrats using towed video system.</li> <li>3. Towed video transects, photo quadrats using towed video system.</li> <li>4. Towed video transects, photo quadrats using towed video system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Habitat mapping.</li> <li>2. Quantitative assessment details not available.</li> <li>3. Drop camera.</li> <li>4. Fixed long-term monitoring sites. Diver video transect.</li> <li>5. Towed video, benthic trawl and sled.</li> </ol>	<ol style="list-style-type: none"> <li>1. Belt transect, size class frequency, video transects, photo quadrat, tagged colonies and terracotta tiles for coral recruitment.</li> <li>2. Quantitative assessment</li> <li>3. Fixed long-term monitoring sites. Diver video transects.</li> <li>4. Towed camera, benthic trawl and sled.</li> </ol>	<p>Benthic habitat mapping, diver swum transects, tagged colonies.</p> <p>Quantitative assessment</p> <p>Towed video, benthic trawl and sled.</p>	<ol style="list-style-type: none"> <li>1. ROV transects.</li> <li>2. ROV transects and driver surveys</li> <li>3. Towed video, benthic trawl and sled</li> </ol>	<ol style="list-style-type: none"> <li>1. ROV Transects</li> <li>2. Benthic habitat mapping, multibeam acoustic swathing.</li> <li>3. ROV video.</li> </ol>	<ol style="list-style-type: none"> <li>1. LTM transects, diver based (video) photo quadrats, specimen collection.</li> <li>2. LTM sites, transects, diver-based video quadrat.</li> <li>3. Diver video transects, still photography, video and in situ visual estimates from transects, quadrats, manta-tows, towed video and ROV.</li> <li>4. Video point intercept transects recorded by towed video or diver hand-held video camera.</li> <li>5. Video transects.</li> <li>6. LTM transects, diver based (video) photo quadrat.</li> </ol>	<ol style="list-style-type: none"> <li>1. Towed Video.</li> <li>2. Multibeam hyperspectral, Diver swum surveys, drop camera.</li> <li>3. Diver swum – belt transects, photo quadrats.</li> <li>4. Drop camera.</li> <li>5. Diver swum – belt transects, photo quadrats.</li> <li>6. Coral collection for taxonomic records.</li> <li>7. Towed video, benthic trawl and sled.</li> <li>8. Coral settlement tiles.</li> <li>9. Collection of fish, coral, mangrove and seagrass samples from reefs along the WA coast, including reefs within the proposed Dampier Archipelago Marine Park. Samples subject to genetic testing.</li> <li>10. The major datasets collected in 2016/17 were for mangroves, seagrass, macroalgae, coral and fish communities. Monitoring of coral and fish communities undertaken using LIT and UVC methods. with all 15 sites visited and surveyed for the second time in this project. four permanent temperature loggers were exchanged on two occasions, November and May, and a full year of data was downloaded.</li> <li>11. Photo quadrants and recruitment tiles</li> </ol>
		<b>References and Data:</b>							

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
		1. AIMS 2014a and Abdul Wahab et al., 2018. DATAHOLDER: AIMS. 2. AIMS 2014b. DATAHOLDER: AIMS. 3. Currey-Randall et al., 2019. DATAHOLDER: AIMS 4. Currey-Randall et al., 2019. DATAHOLDER: AIMS	1. DBCA 2007. DATAHOLDER: DBCA. 2. RPS, 2012. DATAHOLDER: Santos. 3. DATAHOLDER: DBCA. 4. Pitcher et al. (2016). DATAHOLDER: CSIRO.	1. Baseline: Chevron Australia 2010. Marine Monitoring Program: Chevron Australia 2011 Post Dredge: Chevron Australia 2013 DATAHOLDER: Chevron Australia. 2. RPS, 2012. DATAHOLDER: Santos. 3. Bancroft 2009. DATAHOLDER: DBCA. 4. Pitcher et al. (2016). DATAHOLDER: CSIRO.	1. RPS-Bowman Bishaw Gorham 2005. DATAHOLDER: Chevron. 2. RPS, 2012. DATAHOLDER: Santos. 3. Pitcher et al. (2016). DATAHOLDER: CSIRO.	1. Chevron 2010. DATAHOLDER: Chevron. 2. Quadrant Energy/Santos 2016 DATAHOLDER: Santos 3. CSIRO (2013; 2016). Roland Pitcher. DATAHOLDER	1. Advisian 2019 2. Keesing 2019 3. McLean et al. 2019	1. DBCA unpublished data. DATAHOLDER: DBCA 2. AIMS 2015. DATAHOLDER: AIMS. 3. Pilbara Marine Conservation Partnership DATAHOLDER: CSIRO 4. Depczynski et al. 2011 DATAHOLDER: AIMS, DBCA and WAMSI. 5. CSIRO 2019 – Ningaloo Outlook Program 6. Murdoch University - Kobryn et al 2011 and Keulen & Langdon 2011.	1. URS Australia Pty Ltd. 2004. DATAHOLDER: Woodside. 2. SKM, 2008. DATAHOLDER: Woodside, SKM. 3. MSCIENCE, 2010. DATAHOLDER: MSCIENCE. 4. Woodside 2012. DATAHOLDER: Woodside. 5. DBCA. 6. Griffith (2004) Western Australian Museum. 7. CSIRO (2013). DATAHOLDER: Roland Pitcher. 8. CSIRO (2015 and 2016). 9. DBCA (2017) 10. DBCA (2017) 11. Moustaka, et al. 2019 Dataholder: DBCA
Benthic Habitat (Seagrass and Macroalgae)	<b>SM03</b> Quantitative assessment using image capture using either diver held camera or towed video. Post analysis into broad groups based on taxonomy and morphology.	<b>Studies:</b>							
		1. Glomar Shoal and Rankin Bank Environmental Survey Report, 2013, quantitatively surveyed benthic habitats and communities. AIMS report to Woodside. Scientific Publication - Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems, 2018. 2. Rankin Bank Environmental Survey Extension, 2014, Habitat assessment of an area southeast of Rankin Bank. 3. Glomar Shoal and Rankin Bank surveys, 2017. GWF-2 Monitoring Programme. Quantitatively surveyed benthic habitats and communities. 4. Temporal Studies survey of Rankin Bank and Glomar Shoal, 2018.	1. Santos, macroalgae monitoring at sites across Lowendal and the Montebello islands in 2012. 2. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013).	1. Chevron LTM of Seagrass and Macroalgae habitats for the Gorgon Gas Development project. Marine baseline Program (2008, 2009), Marine Monitoring Program (2010), Post Dredge Survey one (2011) 2. Chevron study by RPS in 2004 on Barrow Island intertidal zone. 3. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013).	1. Benthic habitats including seagrass and macroalgae for the (Lowendal Islands, Chevron Janz Feed Gas Pipeline Project.) Gorgon Gas Development Project. 2. Santos macroalgae monitoring at sites across Lowendal and the Montebello islands in 2012. 3. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013).	1. Benthic habitat mapping of the subtidal and intertidal habitats of the islands and shoals. Algae communities in shallow subtidal habitat, intertidal pavement. 3. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013; 2016)	N/A – see Table D-1	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).	1. Benthic habitat monitoring, Mermaid Sound by URS on behalf of Chevron. 2. Pluto baseline marine habitat surveys 2007 – 2008. 3. West Australian Museum marine biodiversity collection. 5. Benthic community monitoring as part of DBCA's Dampier Archipelago Marine Monitoring Program (2007-ongoing). 6. Pilbara Marine Conservation Partnership Seabed biodiversity survey (2013). 7. Distribution, patterns and key processes of major marine communities and large marine fauna (Pluto Offset Program DBCA) 8. Establishment of long-term monitoring reference sites for the Pluto Offset Program – DBCA (in the proposed Dampier Archipelago Marine Park and Cape Preston Marine Management Area).
		<b>Methods:</b>							

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago	
		1. Towed video transects, photo quadrats using towed video system. 2. Towed video transects, photo quadrats using towed video system. 3. Towed video transects, photo quadrats using towed video system. 4. Towed video transects, photo quadrats using towed video system	1. Quantitative assessment details not available. 2. Towed video, benthic trawl and sled.	1. Diver transects, photo quadrats, biomass. 2. Physical observational survey of intertidal habitats on Barrow Island. 3. Towed video, benthic trawl and sled.	1. Diver Transects, Photo Quadrats. 2. Quantitative assessment details not available. 3. Towed video, benthic trawl and sled.	1. ROV transects. 2. Towed video, benthic trawl and sled	N/A – see Table D-1	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.	1. Towed Video. 2. Multi-beam hyperspectral, Diver swum surveys, drop camera. 3. Diving collection to establish diversity, distribution and abundance of biota. 5. Diver swum – belt transects, photo quadrats. 6. Towed video, benthic trawl and sled. 7. Collection of fish, coral, mangrove and seagrass samples from reefs along the WA coast, including reefs within the proposed Dampier Archipelago Marine Park. Samples subject to genetic testing. 8. The major datasets collected in 2016/17 were for mangroves, seagrass, macroalgae, coral and fish communities. Several techniques were trialled for both seagrass and macroalgae monitoring; including benthic imagery, quadrat counts, line intercept measures, and laboratory analysed collections.	
		<b>References and Data:</b>								
		1. AIMS 2014a and Abdul Wahab et al., 2018. DATAHOLDER: AIMS. 2. AIMS 2014b. DATAHOLDER: AIMS. 3. Currey-Randall et. al., 2019. DATAHOLDER: AIMS 4. Currey-Randall et. al., 2019. DATAHOLDER: AIMS	1. RPS 2012. DATAHOLDER: Santos. 2. Pitcher et al. (2016). DATAHOLDER: CSIRO.	1. Baseline: Chevron Australia 2010. Marine Monitoring Program: Chevron Australia 2011 Post Dredge: Chevron Australia 2013 DATAHOLDER: Chevron Australia. 2. RPS-Bowman Bishaw Gorham 2005. DATAHOLDER: Chevron Australia. 3. Pitcher et al. (2016). DATAHOLDER: CSIRO.	1. RPS-Bowman Bishaw Gorham 2005. DATAHOLDER: Chevron. 2. RPS 2012. DATAHOLDER: Santos. 3. Pitcher et al. (2016). DATAHOLDER: CSIRO.	1. Chevron 2010. DATAHOLDER: Chevron 2. CSIRO (2013, 2016). Roland Pitcher. DATAHOLDER	N/A – see Table D-1	1. Cassata and Collins 2008. DATAHOLDER: Curtin University – Applied Geology. 2. CSIRO – Ningaloo Outlook Program 3. Murdoch University - Kobryn et al 2011 and Keulen and Langdon 2011. 4. AIMS (2010) - <a href="http://www.aims.gov.au/creefs">http://www.aims.gov.au/creefs</a>	1. URS Australia Pty Ltd. 2005. DATAHOLDER: Woodside. 2. SKM, 2008. DATAHOLDER: Woodside, SKM. 3. West Australian Museum 2002. DATAHOLDER: WAM, Woodside. 4. Keesing et. Al. 2011 5. DBCA. 6. Towed video, benthic trawl and sled. 7. DBCA (2017) 8. DBCA (2017)	
	<b>SM03</b>	<b>Studies:</b>								

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
<b>Benthic Habitat (Deeper Water Filter Feeders)</b>	Quantitative assessment using image capture using towed video. Post analysis into broad groups based on taxonomy and morphology.	1. Glomar Shoal and Rankin Bank Environmental Survey Report, 2013, quantitatively surveyed benthic habitats and communities. AIMS report to Woodside. Scientific Publication - Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems, 2018. 2. Rankin Bank Environmental Survey Extension, 2014, Habitat assessment of an area southeast of Rankin Bank. 3. Glomar Shoal and Rankin Bank surveys, 2017. GWF-2 Monitoring Programme. Quantitatively surveyed benthic habitats and communities. 4. Temporal Studies survey of Rankin Bank and Glomar Shoal, 2018.	N/A – See Table D-1	N/A – See Table D-1	N/A – See Table D-1	N/A – See Table D-1	N/A – see Table D-1	1. WAMSI 2007 deep-water Ningaloo benthic communities' study, Colquhoun and Heyward (2008). 2. CSIRO/BHP Ningaloo Outlook Program - Deep reef themes 2020	1. Baseline Marine Habitat Survey for the Pluto LNG Project. A total of 315 km2 of Mermaid Sound was mapped in high resolution to distinguish habitat location and extent and further verified with 389 km of towed video.
		<b>Methods:</b>	N/A – See Table D-1	N/A – See Table D-1	N/A – See Table D-1	N/A – See Table D-1	N/A – see Table D-1	1. Towed video and benthic sled (specimen sampling). 2. Side-scan sonar and AUV transects.	1. Drop camera surveys of Deepwater sites (approx. 10 – 35 m depth).
		<b>References and Data:</b>	N/A – See Table D-1	N/A – See Table D-1	N/A – See Table D-1	N/A – See Table D-1	N/A – see Table D-1	1. Colquhoun and Heyward (eds) 2008. DATAHOLDER: WAMSI, AIMS. 2. CSIRO – Ningaloo Outlook 2020	1. SKM 2008. DATAHOLDER: Woodside.
		1. AIMS 2014a and Abdul Wahab et al., 2018. DATAHOLDER: AIMS. 2. AIMS 2014b. DATAHOLDER: AIMS. 3. Currey-Randall et. al., 2019. DATAHOLDER: AIMS 4. Currey-Randall et. al., 2019. DATAHOLDER: AIMS	N/A – See Table D-1	N/A – See Table D-1	N/A – See Table D-1	N/A – See Table D-1	N/A – see Table D-1	1. Colquhoun and Heyward (eds) 2008. DATAHOLDER: WAMSI, AIMS. 2. CSIRO – Ningaloo Outlook 2020	1. SKM 2008. DATAHOLDER: Woodside.
	<b>SM04</b>	<b>Studies:</b>							

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Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
<b>Mangroves and Saltmarsh</b>	Aerial photography and satellite imagery will be used in conjunction with field surveys to map the range and distribution of mangrove communities.	N/A – See Table D-1	<ol style="list-style-type: none"> <li>1. Atmospheric correct and land cover classification, NW Cape.</li> <li>2. Advanced Land Observing Satellite (ALOS) images taken in 2006, 2008, and 2010 by DBCA. Digital Aerial Photos were taken in 2009, and the area ground-truthed in 2006.</li> <li>3. Ground truthing aerial photography to map the spatial extent of mangroves on the Montebello Islands.</li> <li>4. Mangrove monitoring as part of DBCA Western Australian Marine Monitoring Program (ongoing).</li> </ol>	<ol style="list-style-type: none"> <li>1. Chevron LTM of Mangroves for the Gorgon Gas Development project. Marine Baseline Program (2009), Post Dredge Survey 1 (2011), Post Dredge Survey 2 (2013).</li> <li>2. Baseline state of the mangroves 2008.</li> </ol>	<ol style="list-style-type: none"> <li>1. Atmospheric correct and land cover classification, NW Cape.</li> <li>2. Santos Mangrove baseline (2010).</li> <li>3. Santos - Long-term mangrove monitoring (1999-2011).</li> </ol>	<ol style="list-style-type: none"> <li>1. Study conducted by URS (November 2008 to May 2009) to ground truth aerial photography taken between 2001 and 2009 and to identify mangrove species present in the area.</li> </ol>	N/A – see Table D-1	<ol style="list-style-type: none"> <li>1. Atmospheric correct and land cover classification, NW Cape.</li> <li>2. Woodside hold Rapid Eye imagery of the Ningaloo Reef and coastal area.</li> <li>3. Hyperspectral survey (2006) of Ningaloo Reef and coastal area (not yet analysed for Mangroves).</li> <li>4. North West Cape sensitivity mapping 2012 included Mangrove Bay.</li> <li>5. Global mangrove distribution as mapped by the USGS and located on UNEP's Ocean Data viewer.</li> </ol>	<ol style="list-style-type: none"> <li>1. Woodside hold Rapid Eye imagery of the Reef and coastal area (2011)</li> <li>2. Chemical and Ecological Monitoring in Mermaid Sound, 1985 – 2021</li> <li>3. Woodside Mangrove Habitat Distribution in Mermaid Sound, Dampier Archipelago - 2004.</li> <li>4. Distribution, patterns and key processes of major marine communities and large marine fauna – Pluto Offset Program DBCA (of the proposed Dampier Archipelago Marine Park and Cape Preston Marine Management Area).</li> <li>5. Establishment of long-term monitoring reference sites – Pluto Offset Program DBCA (in the proposed Dampier Archipelago Marine Park and Cape Preston Marine Management Area).</li> <li>6. Lymburner et al. (2019) applies quantitative analysis to assess the extent and canopy density of mangroves for each year between 1987 and 2018</li> <li>7. Mangrove baseline data 2017 - Woodside has acquired satellite imagery of coastal areas of mainland and offshore islands from Geraldton and the Abrolhos Islands (in the south) to Dampier Archipelago (out to the Montebello Islands in the north), land classification completed and mangrove habitats identified and mapped</li> </ol>
		<b>Methods:</b>							

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
		N/A – See Table D-1	<ol style="list-style-type: none"> <li>1. Modular Inversion Program. May 2017</li> <li>2. ALOS and Digital aerial photos, ground truthing, for Mangrove extent and mangrove relative canopy density.</li> <li>3. Species Composition, LUX, canopy density.</li> <li>4. Methods unknown.</li> </ol>	<ol style="list-style-type: none"> <li>1. Health scoring system, percentage cover, mean canopy density, qualitative health assessment.</li> <li>2. Annual Mangrove composition, canopy density, pneumatophore density, leaf pathology, qualitative health.</li> </ol>	<ol style="list-style-type: none"> <li>1. Modular Inversion Program. May 2017</li> <li>2. Aerial imagery (resolution of 0.2 m2 captured in 2010).</li> <li>3. Qualitative data includes the presence of new growth, reproductive state, extent of defoliation and pneumatophore condition. Quantitative data, collected at the tree level, includes seedling density, stem diameter, number of defoliated branches and a number of canopy condition parameters.</li> </ol>	<ol style="list-style-type: none"> <li>1. Aerial Photography and Satellite imagery</li> </ol> <p>Species identification and community composition.</p>	N/A – see Table D-1	<ol style="list-style-type: none"> <li>1. Modular Inversion Program. May 2017</li> <li>2. Rapid Eye imagery – High resolution satellite imagery from October/November/December 2011 and 2017.</li> <li>3. Remote sensing – acquisition of HyMap airborne hyperspectral imagery and ground truthing data collection.</li> <li>4. Reconnaissance surveys of the shorelines of the North West Cape and Muiron Islands.</li> <li>5. Remote sensing study of global mangrove coverage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rapid Eye imagery – High resolution satellite imagery from October/November/December 2011.</li> <li>2. Mangrove canopy cover, phenology, photography, vegetation descriptions.</li> <li>3. Aerial photography to identify coverage of mangrove habitat in the area.</li> <li>4. Collection of fish, coral, mangrove and seagrass samples from reefs along the WA coast, including reefs – Pluto Offset Program DBCA (within the proposed Dampier Archipelago Marine Park. Samples subject to genetic testing).</li> <li>5. The major datasets collected in 2016/17 were for mangroves, seagrass, macroalgae, coral and fish communities. Mangrove communities were monitored using two discreet methods. Mangrove extent was analysed using satellite imagery and this was then verified in the field. Quantitative data was also collected for mangrove health at nine sites; this included density, diversity, recruitment, tree size, height and canopy cover.</li> <li>6. PCC% for mangroves using optical and radar data (Landsat sensor spectral composite data (all spectral wavebands) and Advanced Land Observing Satellite (ALOS) Phased Arrayed L-band Synthetic Aperture Radar (SAR) data). for the entire Australian coastline.</li> <li>7. Land cover classification was performed based on atmospherically corrected Sentinel-2 data</li> </ol>
References and Data:									

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
		N/A – See Table D-1	1. EOMAP, 2017 DATAHOLDER: Woodside. 2. DBCA unpublished data. DATAHOLDER: DBCA. 3. Voga unpublished data DATAHOLDER: Voga Contact: [REDACTED] 4. DBCA. DATAHOLDER DBCA.	Baseline: Chevron Australia 2010. Marine Monitoring Program: Chevron Australia 2011 Post Dredge: Chevron Australia 2013 DATAHOLDER: Chevron Australia. Chevron 2014. DATAHOLDER: Chevron.	1. EOMAP, 2017 DATAHOLDER: Woodside. 2. Santos 2014. DATAHOLDER: Santos. 3. Santos 2011. DATAHOLDER: Santos.	1. URS (2010) DATAHOLDER: Chevron Australia	N/A – see Table D-1	1. EOMAP 2017 DATAHOLDER: Woodside. 2. AAM 2014. Dataholder: Woodside 3. Kobryn et al. 2013. DATAHOLDER: Murdoch University, AIMS; Woodside. 4. Joint Carnarvon Basin Operators, 2012. DATAHOLDER: Woodside and Apache Energy Ltd. 5. <a href="http://data.unep-wcmc.org/">http://data.unep-wcmc.org/</a>	1. AAM 2012. DATAHOLDER: Woodside. 2. URS 2013. DATAHOLDER: URS, Woodside. 3. Woodside 2004. 4. DBCA (2017) 5. DBCA (2017) 6. Lyburner et al. 2019. DATAHOLDER: Geoscience Australia, Author ([REDACTED]) 7. SOURCE: EOMAP 2017 report to Woodside
<b>Seabirds</b>	<b>SM05</b> Visual counts of breeding seabirds, nest counts, intertidal bird counts at high tide.	<b>Studies:</b> N/A – See Table D-1	1. No recent studies. A DBCA/WAM study of terrestrial fauna of the islands was published in 2000 (Burbidge et al 2000). The most recent bird survey referenced in this review was 1998 by DBCA (DPaW, CALM).	1. Barrow Island migratory behaviour, nesting and foraging behaviour. 2. Migratory waders at Barrow Island. 3. LTM on Barrow island (island wide) Study September 2003 – 2006. 4. Chevron - Gorgon Gas Development. Terrestrial and subterranean environment monitoring program (2008-2015). Monitoring of Wedge-tailed Shearwaters, Bridled Terns, Silver Gulls.	1. Ongoing study of Bridled Terns from 2009. 2. Quadrant Energy seabird nesting on Lowendal Island, study 2013. 3. Lowendal Islands, common breeding bird species, structure, feeding and disturbances to the population. 4. Quadrant Energy/Santos – Integrated Shearwater Monitoring Program (1994-2016).	1. Migratory waterbirds relevant to the Wheatstone Project on behalf of URS in 2008 - 2009. 2. Quadrant Energy/Santos – Integrated Shearwater Monitoring Program (1994-2016). 3. Exmouth Sub-basin Avifauna Monitoring Program (2013-2014)	Present, in open water, no breeding habitat.	1. LTM Study of marine and shoreline birds: 1970-2011. 2. LTM of shorebirds within the Ningaloo coastline (Shorebirds 2020). 3. Exmouth Sub-basin Marine Avifauna Monitoring Program (Quadrant Energy/Santos). 4. Seabird and Shorebird baseline studies, Ningaloo Region – Report on January 2018 bird surveys. 5. Wedge-tailed shearwater foraging behaviour in the Exmouth Region – Final Report	1. Baseline information in the Pilbara oiled wildlife response plan 2014. 2. Advisian (2021) NMWR Seabird and Shorebird baseline review (Woodside report)
		<b>Methods:</b>							

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
		N/A – See Table D-1	1. Bird observations and counts.	1. Species, total numbers, Distribution, Roosting locations and foraging numbers. Migratory behaviour. 2. High tide roost counts, abundance counts. 3. Nest burrow density (number of burrows per m2); presence/absence of eggs or chicks in burrows; collapsed burrows and predation and mortality records. 4. Barrow Island: Variation in abundance and spatial/temporal distribution on beaches. Middle Island: Abundance; nest density; Presence and absence of eggs/chicks in nest.	1. Nest Density, presence and absence of chicks, predation and mortality counts. 2. Nest burrow density (number of burrows per m2); presence/absence of eggs or chicks in burrows. 3. Burrow scopes, Ultrasonic monitors to monitor burrows. 4. The distribution and abundance of other nesting seabirds within the Lowendal Island group, including up to 45 islands and islets, also occurred from 2004 onwards.	1. Ground counts, aerial surveys of wetlands by helicopter. 2. Burrow count and observation data, burrow density, colony stability, breeding participation, incubation effort and reproductive success has been determined. Tagging data 3. Aerial surveys and onshore island surveys.	N/A	1. Counts of nesting areas, counts of intertidal zone during high tide. 2. The Shorebirds 2020 database comprises the most complete shorebird count data available in Australia. The data have been collected by volunteer counters and BirdLife Australia staff for approximately 150 roosting and feeding sites, mainly in coastal Australia. The data go back as far as 1981 for key areas. 3. The Exmouth Sub-basin Marine Avifauna Monitoring Program undertook a detailed assessment of seabird and shorebird use in the Exmouth Sub-basin. Four aerial surveys and four island surveys were conducted between February 2013 and January 2015 for this Program, inclusive of the mainland coasts, of shore islands and a 2,500 km <sup>2</sup> area of ocean adjacent to the Exmouth Sub-basin. 4. Shorebird counts, Shearwater Burrow Density. 5. Telemetry (GPS & Satellite).	1. Species, total numbers, Distribution, presence/absence of eggs or chicks in burrows. 2. Desktop literature review
<b>References and Data:</b>									
		N/A – See Table D-1	DBCA/WAM – Burbidge et al 2000.	1. Bamford M.J. & A.R 2004. DATAHOLDER: Chevron. 2. Bamford M.J & A.R 2011. DATAHOLDER: Chevron. 3. Chevron, 2013. DATAHOLDER: Chevron. 4. Chevron 2013. DATAHOLDER: Chevron.	1. Bamford M.J. & A.R 2004. DATAHOLDER: Chevron. 2. Surman 2012. DATAHOLDER: Santos. 3. Bamford M.J & A.R 2011. DATAHOLDER: Chevron. 4. DATAHOLDER: Santos.	1. Bamford, MJ & AR. 2011. DATAHOLDER: Chevron. 2. Quadrant Energy/Santos. Dataholders. Santos 3. Quadrant Energy/Santos. Dataholders. Santos	N/A	1. Johnstone et al. 2013. DATAHOLDER: WA MUSEUM. AMOSC/DBCA (DPaW) 2014. 2. BirdLife Australia DATAHOLDER: Woodside and BirdLife Australia 3. Surman & Nicholson 2015. 4. BirdLife Australia: DATAHOLDER: Woodside 5. Cannel et al. 2019 DATAHOLDER: UWA and BirdLife Australia	1. AMOSC/DBCA 2014. DATAHOLDER: AMOSC/DBCA. 2. Report to Woodside commissioned study – Advisian (2021)
<b>Turtles</b>	<b>SM06</b>	<b>Studies:</b>							

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
	Beach surveys (recording species, nests, and false crawls).	N/A – See Table D-1	<ol style="list-style-type: none"> <li>LTM Study of Green, Flatback, Hawksbill turtles on beaches within the Barrow, Lowendal and Montebello Island Complex for Chevron.</li> <li>Marine turtle monitoring as part of DBCA long-term turtle monitoring program (ongoing).</li> </ol>	Chevron - Gorgon Gas Development. Long-term Turtle Monitoring Program - Flatback tagging program and marine turtle track census program (2005 –ongoing).	<ol style="list-style-type: none"> <li>LTM Study of Green, Flatback, Hawksbill turtles on beaches within the Barrow, Lowendal and Montebello Island Complex.</li> <li>Santos 2013 turtle nesting survey on the Lowendal islands.</li> <li>Varanus Island Turtle monitoring program (2005 – present).</li> </ol>	<ol style="list-style-type: none"> <li>Baseline marine turtle surveys 2009 (included the islands of Serrurier, Bessieres and Thevenard), Pendoley (2009).</li> <li>Exmouth Islands Turtle Monitoring Program (2013 and 2014)</li> <li>North West Shelf Flatback Turtle Conservation Program's</li> <li>Inter-nesting distribution of flatback turtles and industrial development in Western Australia (Thevenard Island)</li> </ol>	Present, in open water, no nesting habitats.	<ol style="list-style-type: none"> <li>Exmouth Islands Turtle Monitoring Program.</li> <li>Ningaloo Turtle Program</li> <li>Turtle activity and nesting on the Muiron Islands and Ningaloo Coast (2018).</li> <li>Spatial and temporal use of inter-nesting habitat by sea turtles along the Muiron Islands and Ningaloo Coast – 2018-2019</li> </ol>	<ol style="list-style-type: none"> <li>DBCA Photogrammetry survey of marine turtle nesting beaches in Dampier Archipelago 2019-2020</li> <li>Holden Beach sea turtle habitat. Pendoley Environmental (2006) on behalf of Woodside for the Pluto Development.</li> <li>Marine turtle monitoring as part of DPAWs long-term turtle monitoring program within the Dampier Archipelago (ongoing)</li> <li>Nesting ecology of flatback sea turtles <i>Natator depressus</i> from Delambre Island collected over 2–3 weeks each nesting season across six nesting seasons (2010-2016).</li> </ol>
<b>Methods:</b>									
		N/A – See Table D-1	Nesting demographics (composition, spatial variability, seasonal distribution, post-nesting dispersion).	Island wide (though primary nesting occurs on east coast). Mundabullangana on mainland is the reference location for the Flatback tagging program.	<ol style="list-style-type: none"> <li>Nesting demographics (composition, spatial variability, seasonal distribution, post-nesting dispersion).</li> <li>Tagging and nest counts.</li> <li>Tagging and nest counts. Varanus, Beacon, Bridled, Abutilon and Parakeelya islands.</li> </ol>	<ol style="list-style-type: none"> <li>Beach/Nesting surveys (counts by species).</li> <li>Beach/Nesting surveys (counts by species).</li> <li>Nesting and tagging studies</li> <li>Satellite tracking methods</li> </ol>	N/A	<ol style="list-style-type: none"> <li>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.</li> <li>Long term trends in marine turtle populations, beach surveys, track counts, best location, mortality counts.</li> <li>On-beach monitoring and aerial surveys.</li> <li>Tagging (satellite transmitter), analysis of interesting, migration and foraging grounds movements and behaviour.</li> </ol>	<ol style="list-style-type: none"> <li>High Resolution aerial surveys</li> <li>Adult tracks, body pits, nests, emerged nests.</li> <li>Adult tracks, body pits, nests, emerged nests.</li> <li>Flipper tag resightings and track counts</li> </ol>
<b>References/Data:</b>									

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
		N/A – See Table D-1	1. AMOSC/DPaW 2014. DATAHOLDER: Chevron. 2.DBCA.	Pendoley Environmental (2005-ongoing). DATAHOLDER: Chevron.	1. Pendoley 2005. AMOSC/DBCA (DPaW) 2014. DATAHOLDER: Chevron/ Santos. 2. Santos, 2014. DATAHOLDER: Santos. 3. Santos (2005 – present)	1. Pendoley 2009. DATAHOLDER: Chevron. 2. Quadrant Energy/Santos. Dataholders. Santos 3. DBCA. Dataholder 4. Pendoley Environment -Whitlock, Pendoley and Hamann (2010-2011)	N/A	1.Santos – Report. 2. NTP Annual Reports DATAHOLDERS: DBCA. Reports available at <a href="http://www.ningalooturtle.org.au/media_reports.html">http://www.ningalooturtle.org.au/media_reports.html</a> 3.Rob et al. 2019 DATAHOLDER: DBCA 4.Tucker et al. 2019 DATAHOLDER: DBCA	1. DBCA Karratha office 2. Pendoley Environmental 2006. DATAHOLDER: Woodside. 3. DBCA 4. Thums et al 2019 DATAHOLDER: AIMS
<b>Fish</b>	<b>SM09</b> Baited Remote Underwater Video Stations (BRUVS), Visual Underwater Counts (VUC), Diver Operated Video (DOV).	<b>Studies:</b> 1. Glomar Shoal and Rankin Bank Environmental Survey Report, 2013, quantitatively surveyed benthic habitats and communities. AIMS report to Woodside. Scientific Publication - Biodiversity and spatial patterns of benthic habitat and associated demersal fish communities at two tropical submerged reef ecosystems, 2018. 2. Rankin Bank Environmental Survey Extension, 2014, Habitat assessment of an area southeast of Rankin Bank. 3. Glomar Shoal and Rankin Bank surveys, 2017. GWF-2 Monitoring Programme. Quantitatively surveyed benthic habitats and communities. 4. Temporal Studies survey of Rankin Bank and Glomar Shoal, 2018.	1. DBCA diver surveys 2009-2012. 2. Pilbara Marine Conservation Partnership Stereo BRUVS drops in shallow water (~8-20m) in 2014 and deeper (20-60m) in 2015 inside and outside sanctuary zones at the Montebello Islands and in the area from Cape Preston to the Montebello Islands in 2015. 3. Finfish monitoring as part of DBCA Western Australian Marine Monitoring Program (2015-ongoing).	1. Chevron LTM of demersal fish for the Gorgon Gas Development project. Marine Baseline Program (2008, 2009), Post Dredge Survey 1 (2011), Post Dredge Survey 2 (2012). 2. Pilbara Marine Conservation Partnership Stereo BRUVS drops in shallow water (~10m) from Exmouth to Barrow Islands in 2015. 3. Finfish monitoring as part of DBCAs Western Australian Marine Monitoring Program (2015-ongoing).	1. Pilbara Marine Conservation Partnership Stereo BRUVS drops in shallow water (~10m) Montebello Sanctuaries 2015. 2. WA Museum fish surveys of Dampier Archipelago 1998-2000 (Hutchins 2004).	1.Pilbara Marine Conservation Partnership Stereo BRUVS drops in deep water (20-55m) offshore of Bessieres Island in 2016.	1. CSIRO – Fish Diversity. 2. Fish species richness and abundance.	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 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. Fish assemblages quantitatively described Mermaid Sound using BRUVs. Recorded main habitat types (sand, reef, coral and macroalgae) and at a total of 412 sites. 2. West Australian Museum of Fish of Dampier archipelago. 3. Pilbara Marine Conservation Partnership Stereo BRUVS drops in shallow water (~10m) in 2015 around the Dampier Archipelago. 4. Finfish community monitoring as part of DBCA Dampier Archipelago Marine Monitoring Program (2007-ongoing).
		<b>Methods:</b>							

Major Baseline	Proposed Scientific monitoring operational plan and Methodology	Rankin Bank & Glomar Shoal	Montebello Islands	Barrow Island	Lowendal Islands	Pilbara Islands – Southern Island Group (Serrurier, Thevenard and Bessieres Islands – State Nature Reserve)	Montebello AMP	Ningaloo and the Muiron Islands	Dampier Archipelago
		<ol style="list-style-type: none"> <li>BRUVs.</li> <li>BRUVs.</li> <li>BRUVs.</li> <li>BRUVs.</li> </ol>	<ol style="list-style-type: none"> <li>Diver Operated Video - species richness, community composition, and biomass were recorded from 2009-2012.</li> <li>Stereo BRUVs.</li> <li>Diver UVS.</li> </ol>	<ol style="list-style-type: none"> <li>Intertidal and subtidal surveys using BRUVS and Netting.</li> <li>Stereo BRUVs.</li> <li>Diver UVS.</li> </ol>	<ol style="list-style-type: none"> <li>Stereo BRUVS</li> <li>Diver surveys _ Underwater Visual Census (UVC).</li> </ol>	<ol style="list-style-type: none"> <li>Stereo BRUVs</li> </ol>	<ol style="list-style-type: none"> <li>Semi V Wing trawl net or an epibenthic sled.</li> <li>ROV Video..</li> </ol>	<ol style="list-style-type: none"> <li>UVC surveys.</li> <li>BRUVS Study with 304 video samples at three specific depth ranges (1-10 m, 10-30 m and 30-110m).</li> <li>UVC surveys.</li> <li>Stereo BRUVS 5. Snorkel and Scuba surveys.</li> <li>Underwater visual census.</li> <li>Diver operated video.</li> <li>Diver UVC.</li> <li>Diver UVC, stereo BRUVs</li> </ol>	<ol style="list-style-type: none"> <li>BRUVs, Stereo Baited Remote Underwater Video Systems.</li> <li>Fish collected and species lists.</li> <li>Stereo BRUVs.</li> <li>Diver UVS.</li> </ol>
<b>References/Data:</b>									
		<ol style="list-style-type: none"> <li>AIMS 2014a and Abdul Wahab et al., 2018. DATAHOLDER: AIMS.</li> <li>AIMS 2014b. DATAHOLDER: AIMS.</li> <li>Currey-Randall et. al., 2019. DATAHOLDER: AIMS</li> <li>Currey-Randall et. al., 2019. DATAHOLDER: AIMS</li> </ol>	<ol style="list-style-type: none"> <li>DBCAs data. DATAHOLDER: DBCA</li> <li>CSIRO Data DATAHOLDER: CSIRO Data centre ( )</li> <li>DBCAs.</li> </ol>	<ol style="list-style-type: none"> <li>Baseline: Chevron Australia 2010. Marine Monitoring Program: Chevron Australia 2011. Post Dredge: Chevron Australia 2013 DATAHOLDER: Chevron Australia.</li> <li>CSIRO Data DATAHOLDER: CSIRO Data centre ( )</li> <li>DBCAs.</li> </ol>	<ol style="list-style-type: none"> <li>UWA. The UWA Oceans Institute &amp; School of Biological Sciences.</li> <li>DATAHOLDER: Woodside and WAM.</li> </ol>	<ol style="list-style-type: none"> <li>CSIRO. DATAHOLDER: CSIRO ( )</li> </ol>	<ol style="list-style-type: none"> <li>Keesing 2019.</li> <li>McLean et al. 2019.</li> </ol>	<ol style="list-style-type: none"> <li>AIMS 2014. DATAHOLDER: AIMS/Woodside.</li> <li>Fitzpatrick et al. 2012. DATAHOLDERS: WAMSI, AIMS.</li> <li>DBCAs unpublished data. DATAHOLDER: DBCA/AIMS.</li> <li>CSIRO Data DATAHOLDER: CSIRO Data Centre ( )</li> <li>Stevens, J.D., P.R., White, W.T., McAuley, R.B., Meekan, M.G. 2009.</li> <li>WAMSI unpublished data DATAHOLDER: AIMS ( )</li> <li>DATAHOLDER: WAMSI</li> <li>CSIRO – Ningaloo Outlook 2020.</li> </ol>	<ol style="list-style-type: none"> <li>SKM 2008. DATAHOLDER: Woodside.</li> <li>Hutchins 2004. DATAHOLDER: Woodside and WAM.</li> <li>CSIRO. DATAHOLDER: CSIRO ( )</li> <li>DBCAs.</li> </ol>

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## ANNEX E: TACTICAL RESPONSE PLANS

TACTICAL RESPONSE PLANS
Exmouth
Mangrove Bay
Turquoise Bay
Yardie Creek
Muiron Islands
Jurabi to Lighthouse Beaches Exmouth
Ningaloo Reef - Refer to Mangrove/Turquoise bay and Yardie Creek
Exmouth Gulf
Shark Bay Area 1: Carnarvon to Wooramel
Shark Bay Area 2: Wooramel to Petite Point
Shark Bay Area 3: Petite Point to Dubaut Point
Shark Bay Area 4: Dubaut Point to Herald Bight
Shark Bay Area 5: Herald Bight to Eagle Bluff
Shark Bay Area 6: Eagle Bluff to Useless Loop
Shark Bay Area 7: Useless Loop to Cape Bellefin
Shark Bay Area 8: Cape Bellefin to Steep Point
Shark Bay Area 9: Western Shores of Edel Land
Shark Bay Area 10: Dirk Hartog Island
Shark Bay Area 11: Bernier and Dorre Islands
Abrohlos Islands: Pelseart Group
Abrohlos Islands: Wallabi Group
Abrohlos Islands: Easter Group
Dampier
Rankin Bank & Glomar Shoals
Barrow and Lowendal Islands
Pilbara Islands - Southern Island Group
Montebello Island - Stephenson Channel Nth
Montebello Island Champagne Bay & Chippendale channel
Montebello Island - Claret Bay
Montebello Island - Hermite/Delta Is Channel
Montebello Island - Hock Bay
Montebello Island - North & Kelvin Channel
Montebello Island - Sherry Lagoon Entrance
Withnell Bay
Holden Bay
King Bay
No Name Bay / No Name Beach
Enderby Island - Dampier
Rosemary Island - Dampier
Legendre Island - Dampier
Karratha Gas Plant

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KGP to Whitnell Creek
KGP to Northern Shore
KGP Fire Pond & Estuary
KGP to No Name Creek
Broome
Sahul Shelf Submerged Banks and Shoals
Clerke Reef (Rowley Shoals)
Imperieuse Island (Rowley Shoals)
Mermaid Reef (Rowley Shoals)
Scott Reef
Oiled Wildlife Response
Exmouth
Dampier region
Shark Bay

## APPENDIX E 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>

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## APPENDIX F STAKEHOLDER CONSULTATION

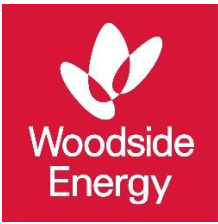
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**Table 1: Consultation Report with Relevant Persons or Organisations**

<b>Commonwealth and WA State Government Departments or Agencies – Marine</b>		
<b>Australian Border Force (ABF)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Australian Border Force on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided the ABF with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed ABF advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet.</li> <li>• On 27 January 2023, Woodside emailed ABF with an update on the proposed activity (Appendix F, reference 4.1) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.1).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has addressed maritime security-related issues in <b>Section 6</b> 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 for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to AFMA on 31 August 2021 based on their function, interest, and activities.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside addressed and responded to AFMA over a 22 month period.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed AFMA advising of the proposed activity (Appendix F, reference 1.14) and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.22 and 1.23).
- On 1 September 2021, AFMA emailed Woodside:
  - AFMA stated that due to limited resources they were unable to comment on individual proposals, however, they noted it was important to consult with all fishers who have entitlements to fish within the proposed area.
  - AFMA advised this could be done through the relevant fishing industry associations or directly with fishers who hold entitlements in the area and provided information for contacting them.
- On 3 February 2023, Woodside emailed AFMA with an update on the proposed activity (Appendix F, reference 4.28) and provided an updated Consultation Information Sheet and fisheries maps.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.2).
- On 22 May 2023, Woodside emailed AFMA requesting Commonwealth fishery licence holder contact details unrelated to this proposed activity.
- On 30 May 2023, AFMA responded to advise there will be a change in providing this information. In a further follow up email on the same day, AFMA advised there is a fee payable for this information and a need to sign a Deed of Confidentiality.
- On 17 July 2023, an agreement was reached with AFMA for Woodside to consult directly with Commonwealth fisheries as per contact details provided by AFMA under the new Deed of Confidentiality.

**Summary of Feedback, Objection or Claim**

**Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response**

**Environment Plan Controls**

<p>AFMA provided feedback stating:</p> <ul style="list-style-type: none"> <li>• They were unable to comment on individual proposals but Woodside should consult with all fishers with entitlements within the proposed area.</li> <li>• This could be done via relevant fishing industry associations and contacts were provided.</li> <li>• AFMA advised they were changing the way they provided information and requested Woodside sign a Deed of Confidentiality.</li> </ul> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has addressed AFMA's feedback, including confirming that Woodside had 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.</p> <p>Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>An agreement was reached with AFMA for Woodside to consult directly with Commonwealth fisheries as per contact details provided by AFMA under the new Deed of Confidentiality.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
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**Australian Hydrographic Office (AHO) / Australian Hydrographic Service (AHS)**

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to AHO on 31 August 2021 based on their function, interest, and activities.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to AHO over a 22 month period.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed AHO advising of the proposed activity (Appendix F, reference 1.4) and provided a Consultation Information Sheet and shipping lanes map (Appendix F, reference 1.4.1).
- On 31 August 2021, AHO responded, acknowledging receipt of Woodside’s email.
- On 27 January 2023, Woodside emailed AHO with an update on the proposed activity (Appendix F, reference 4.2) 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, the AHO responded 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 5.48).
- On 1 March 2023, AHO emailed Woodside and acknowledged receipt of Woodside’s consultation email.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
Whilst feedback has been received, there were no objections or claims.	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 <b>Section 7</b> ).	Woodside will notify the AHO no less than four working weeks before operations commence, as referenced as <b>PS 1.3</b> in this EP. No additional measures or controls are required

**Australian Maritime Safety Authority (AMSA) – Marine Safety**

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to AMSA – Marine Safety on 31 August 2021 based on their function, interest, and activities.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to AMSA – Marine Safety over a 22 month period.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed AMSA advising of the proposed activity (Appendix F, reference 1.4) and provided a Consultation Information Sheet and shipping lanes map (Appendix F, reference 1.4.1).
- On 1 September 2021, AMSA emailed Woodside requesting:
  - The AHS be contacted no less than four working weeks before operations commence for the promulgation of related notices to mariners.
  - AMSA's Joint Rescue Coordination Centre (JRCC) be notified at least 24–48 hours before operations commence
  - Provide updates to the AHS and JRCC should there be changes to the activity.
  - Vessels exhibit appropriate lights and shapes to reflect the nature of operations and comply with the International Rules of Preventing Collisions at Sea.
  - AMSA provided advice on obtaining vessel traffic plots, including digital datasets and maps.
- On 27 January 2023, Woodside emailed AMSA with an update on the proposed activity (Appendix F, reference 4.2) and provided an updated Consultation Information Sheet.
- On 31 January 2023, AMSA emailed Woodside requesting additional information relating to moorings (the subject of a related Scarborough activity) and their potential impact on shipping traffic. AMSA also requested Woodside to confirm its current GIS data so that AMSA can map it and assess navigation safety. AMSA requested for Woodside to send its updated Shipping Lane figures.
- 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 and 10 February 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 and sent through 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 a response relating to a separate Scarborough activity. Woodside provided an updated shipping lane map (Appendix F, reference 5.48).

<ul style="list-style-type: none"> <li>• On 3 March 2023 AMSA emailed Woodside:</li> <li>• 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.</li> <li>• On 8 March 2023 Woodside emailed AMSA:             <ul style="list-style-type: none"> <li>- 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.</li> </ul> </li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>AMSA has provided feedback and requested further information relating to:</p> <ul style="list-style-type: none"> <li>• Moorings and their potential impact on shipping traffic</li> <li>• GIS Data</li> <li>• Updated Shipping Lane figures</li> <li>• Clarification on how the EMBA will affect vessel traffic.</li> </ul> <p>AMSA provided details around notifications and contact details.</p>	<p>Woodside has addressed AMSA’s requests and provided additional information including:</p> <p>providing the operational area polygons in shapefile format for the proposed activity.</p> <p>Provided an updated shipping map.</p> <p>Explained the EMBA for the proposed activity.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside will notify AMSA’s JRCC at least 24–48 hours before operations commence, as referenced as <b>PS 1.5</b> in this EP.</p> <p>Woodside will notify AHO no less than four working weeks before operations commence, as referenced as a <b>PS 1.3</b> in this EP.</p> <p>Woodside considers the measures and controls in the EP are appropriate.</p> <p>No additional measures or controls are required.</p>

**Australian Maritime Safety Authority (AMSA) – Marine Pollution**

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to AMSA – Marine Pollution on 31 August 2021 based on their function, interest, and activities.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent follow up emails seeking feedback on the proposed activities.
- Woodside has provided the AMSA – Marine Pollution with the opportunity to provide feedback over a 22 month period.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed AMSA advising of the proposed activity (Appendix F, reference 1.4) and provided a Consultation Information Sheet and shipping lanes map (Appendix F, reference 1.4.1).
- On 5 November 2021, Woodside provided a copy of the Oil Pollution First Strike Plan to AMSA (Appendix F, reference 1.4.2)
- On 27 January 2023, Woodside emailed AMSA with an update on the proposed activity (Appendix F, reference 4.1) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.1).

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has addressed oil spill preparedness and response strategy in <b>Appendix D</b> . 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 (formerly DAWE)**

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to DCCEEW/DAFF on 31 August 2021 based on their function, interest, and activities.

- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to DCCEEW/DAFF over a 22 month period.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed DAWE advising of the proposed activity considering biosecurity matters (Appendix F, reference 1.5).and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.22).
- On 17 December 2021, Woodside emailed DAWE seeking 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:
  - Reading the documents on DAWE's website (Blue Whale CMP,) our understanding is 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". 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. Is that the correct interpretation?
- On 20 December 2021, DAWE responded noting:
  - 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.
  - 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). We 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 our 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." 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. These maps may be of use.
- 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 3 February 2023, Woodside emailed DCCEEW / DAFF – Fisheries with an update on the proposed activity (Appendix F, reference 4.29) and provided an updated Consultation Information Sheet, fisheries maps and Commonwealth Shipwrecks Information (Appendix F, reference 4.29.1).
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.4).



<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>In the course of preparing this and other Woodside EPs, DCCEEW has provided 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.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside provided advice about the proposed activity considering biosecurity matters and also provided information and a fisheries map. Woodside later provided updated information and maps.</p> <p>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. Woodside's interpretation of the Pygmy Blue Whale advice has been applied in the EP, see <b>Section 4.6.3</b>.</p> <p>Woodside has provided consultation information to CFA, AFMA, DAFF – Fisheries, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside has addressed maritime biosecurity issues in <b>Section 6</b> of this EP based on previous offshore activities.</p> <p>Woodside has assessed the relevancy of Commonwealth fisheries issues in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>Pygmy blue whale advice has been applied in the EP, see <b>Section 4.6.3</b>.</p> <p>No additional measures or controls are required.</p>
<b>Department of Defence (DoD)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to DoD on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has addressed and responded to DoD over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed DoD advising of the proposed activity (Appendix F, reference 1.6) and provided a Consultation Information Sheet and defence map (Appendix F, reference 1.6.1).</li> <li>• On 31 August 2021, DoD emailed Woodside:</li> </ul>		

- DoD advised it has previously responded regarding the proposed Scarborough Pipeline and associated activities, and that response remains current. The previous response included information about unexploded ordnance risks and DoD notification requirements prior to activity commencement.
- On 10 May 2022 Woodside emailed DoD to clarify the potential risk of UXOs in the Scarborough Development Operational Area.
- On 13 May 2022 DoD emailed Woodside:
  - DoD noted that the UXO risk data has been updated. Currently the UXO webmap has one historical location but it falls outside of the proposed pipeline route. It is reasonable to assess the risk of UXO in the Operational Area to be negligible.
- On 13 May 2022, Woodside thanked DoD for their email of the same date and the information provided.
- On 25 August 2022, Woodside emailed DoD:
  - Woodside noted DoD had previously confirmed there are no specific UXO records for activities in the North West Exercise Area (NWXA) and it is reasonable to assess the risk to be negligible. Woodside asked for clarification as to whether the advice that there are no specific records of UXO in the area means that no categorisation is required and so no further advice is required.
- On 23 September 2022, Woodside followed up on its 25 August 2022 email.
- On 23 September 2022, DoD emailed Woodside:
  - DoD confirmed that the area of the NWXA would be classed as Remote in accordance with its land counterpart. The risk of encountering UXO is Very Low, but not absent.
- On 27 January 2023, Woodside emailed DoD with an update on the proposed activity (Appendix F, reference 4.3) and provided an updated Consultation Information Sheet.
- On 20 February 2023, DoD emailed Woodside and reiterated previous advice provided. In an additional email on the same day DoD also provided Woodside with a figure outlining its restricted airspace and Defence Training Areas off the WA Coast.
- On 13 March 2023, Woodside emailed DoD (Appendix F, reference 5.50) thanking them for their feedback and advised that:
  - 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 NWXA and restricted airspace.
  - Woodside noted the advice with respect to the location, identification, removal, or damage to equipment from unexploded ordinances (UXOs). Woodside provided 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.
    - Australian Hydrographic Office (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. Woodside also provided an updated defence zone map.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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<p>DoD has provided feedback relating to: the location of the activity in proximity to the NWXA and the potential presence of UXO.</p> <p>Notification requirements</p> <p>DoD has provided advice relating to: Details of its restricted airspace and Defence Training Areas off the WA Coast</p>	<p>Woodside has reviewed the proposed activity and the location of the NWXA and UXOs to understand the potential for UXOs to be within the Operational Area. The Learmonth Air Weapons Range (AWR) practice area is approximately 76 km south of the operational area and the location of any UXOs (known to occur) are near Bessieres Island which is located 165 km south of the Operational Area. A UXO survey may be carried out as part of pre-Trunkline installation work where there is deemed to be a credible risk.</p> <p>Woodside acknowledges the potential presence of UXOs and has considered this in its risk assessment planning.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside has addressed DoDs expectations on notifications – Defence, restricted air space and AHO (<b>PS 1.6</b> and <b>PS 1.3</b>, Table 7-8).</p> <p>AHO have been engaged for the activity and are included in Woodside’s activity notification protocols. AHO will be notified four weeks prior to the start of activities.</p> <p>Woodside considers the measures and controls in the EP are appropriate.</p> <p>No additional measures or controls are required.</p>
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<b>Department of Primary Industries and Regional Development (DPIRD)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to DPIRD on 31 August 2021 based on their function, interest, or activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has addressed and responded to DPIRD over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed DPIRD advising of the proposed activity (Appendix F, reference 1.11) and provided a Consultation Information Sheet and fisheries maps (Appendix F, reference 1.22 and 1.23). <ul style="list-style-type: none"> <li>- On 3 February 2023, Woodside emailed DPIRD with an update on the proposed activity (Appendix F, reference 4.30) and provided an updated Consultation Information Sheet and fisheries maps.</li> </ul> </li> <li>• On 10 February 2023, DPIRD emailed Woodside to advise it is preparing a draft response and requested information on how far the proposed trunkline will be situated from the Rankin Bank.</li> <li>• On 13 February 2023, Woodside emailed DPIRD to advise that the Scarborough trunkline operational area is ~25 km to Rankin Bank at the closest point in Commonwealth waters. At this location the depth of the trunkline is ~70m and no impacts and risks from planned activities to Rankin Bank are expected. <ul style="list-style-type: none"> <li>- Woodside advised it will update this information in the next revision of the SITI EP.</li> </ul> </li> <li>• On 17 February 2023, DPIRD responded noting that as the activity is proposed for waters unlikely to influence fishing activities, it has no further comments at this time.</li> <li>• On 24 February 2023, Woodside emailed DPIRD thanking it for its feedback and confirming that Woodside has consulted state commercial fishery licence holders and recreational fishery licence holders that are active within the EMBA for the proposed activity.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>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.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p>

		No additional measures or controls are required.
<b>Department of Transport (DoT)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to DoT on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has addressed and responded to DoT over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed DoT advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet.</li> <li>• On 3 September 2021, DoT emailed Woodside: <ul style="list-style-type: none"> <li>- DoT requested 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).</li> </ul> </li> <li>• On 5 November 2021, Woodside emailed DoT and provided a copy of the First Strike Plan (Appendix F, reference 1.2.1).</li> <li>• On 7 December 2021, DoT emailed Woodside: <ul style="list-style-type: none"> <li>- DoT advised that they had no queries regarding the First Strike Plan and requested that Woodside provide them with a final accepted version when available.</li> </ul> </li> <li>• On 7 December 2021, Woodside emailed to thank DoT for their email and acceptance of the First Strike Plan.</li> <li>• On 27 January 2023, Woodside emailed DoT with an update on the proposed activity (Appendix F, reference 4.1) and provided an updated Consultation Information Sheet.</li> <li>• On 7 February 2023, DoT emailed Woodside: <ul style="list-style-type: none"> <li>- DoT requested 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).</li> </ul> </li> <li>• On 22 February 2023, Woodside emailed DoT: <ul style="list-style-type: none"> <li>- Woodside confirmed that if there is a risk of a spill impacting State waters, the Department of Transport (Marine Oil Pollution) will be consulted.</li> </ul> </li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>DoT has provided feedback on the proposed activity relating to:</p> <ul style="list-style-type: none"> <li>• The draft Oil Pollution First Strike Plan and a request for a final accepted version of the plan when available.</li> </ul>	<p>Woodside has addressed DoT's feedback regarding the Oil Pollution First Strike Plan and incorporated referenced changes based on feedback.</p> <p>Woodside will send DoT a copy of the First Strike Plan once accepted.</p>	<p>Woodside will provide DoT with a copy of the accepted Oil Pollution First Strike Plan, as referenced in the OSPRMA (<b>Appendix D</b>).</p> <p>Woodside will consult DoT if there is a spill impacting State water from the proposed activity, as referenced in the OSPRMA (<b>Appendix D</b>).</p>

<ul style="list-style-type: none"> <li>• Consultation requirements in the event of a spill impacting State waters from any of the proposed activities.</li> <li>• Whilst feedback has been received, there were no objections or claims.</li> </ul>	<p>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 <b>Section 7</b>).</p>	<p>No additional measures or controls are required.</p>
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**Department of Planning, Lands and Heritage (DPLH)**

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to DPLH on 1 February 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to DPLH over a 5 month period.

**Summary of information provided and record of consultation:**

- On 1 February 2023, Woodside emailed DPLH advising of the proposed activity (Appendix F, reference 4.25) and provided a Consultation Information Sheet and map of State Waters Shipwrecks (Appendix F, reference 4.27).
- On 17 February 2023, DPLH emailed Woodside to advise that a Heritage Officer will be in contact regarding this referral.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.31).
- On 28 February 2023, DPLH confirmed that they were 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 a follow up email.
- On 9 May 2023, DPLH emailed to advise that regarding the State Heritage Referral: P50372 for the SITI activities, 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 DPLH thanking DPLH for the advice regarding heritage impacts.
  - Woodside confirmed that Woodside will contact the Western Australian Museum in the event of any maritime archaeological impacts from the proposed activities.
  - Woodside also asked whether DPLH had any feedback with respect to other Scarborough EPs for which Woodside has also provided consultation information.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>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</p>	<p>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 <b>Section 7</b>).</p>	<p>The EP demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts to the values of any underwater heritage or shipwrecks as a result of planned activities (<b>Section 4.9.1</b>). 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 <b>Section 6.8.2</b> and <b>Section 6.8.3</b>.</p> <p>No additional measures or controls are required.</p>
<b>Pilbara Ports Authority (PPA)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to PPA on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has addressed and responded to PPA over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed PPA advising of the proposed activity (Appendix F, reference 1.18) and provided a Consultation Information Sheet. PPA was also informed as a member of the Karratha Community Liaison Group, but is being treated as its own relevant person in this EP.</li> <li>• On 3 September 2021, PPA emailed Woodside, noting it had previously provided feedback on consultation on the overall project. PPA requested confirmation the feedback had been recorded and noted its comments were relevant to both EPs.</li> <li>• On 10 September 2021 PPA responded, acknowledging PPA's previous feedback and requesting information on: <ul style="list-style-type: none"> <li>- The risks of the activities being conducted in Port waters,</li> <li>- What controls/mitigation strategies will be in place,</li> <li>- What monitoring programs will be in place,</li> <li>- Incident reporting requirements.</li> </ul> </li> <li>• On 10 September 2021, Woodside thanked PPA for their email and advised it will look into presentation meeting dates for October.</li> </ul>		

<ul style="list-style-type: none"> <li>On 5 October 2021, Woodside held an information session with PPA to address their interests and to provide more detail regarding installation activities and impacts relevant to PPA areas of interest.</li> <li>On 4 November 2021, Woodside emailed PPA to advise details regarding sending the Oil Pollution First Strike Plan.</li> <li>On 4 November 2021, PPA acknowledged Woodside's email.</li> <li>On 5 November 2021, Woodside provided a copy of the Oil Pollution First Strike Plan to PPA (Appendix F, reference 1.18.1)</li> <li>On 5 November 2021, PPA responded, thanking Woodside for the Plan and noted it will review and provide a response in the following weeks.</li> <li>On 15 November 2021, PPA emailed Woodside with feedback on five sections of the Plan.</li> <li>On 26 November 2021, Woodside provided a response to the PPA's feedback, noting all points were amended in line with its feedback.</li> <li>On 2 December 2021, PPA responded, confirming it was happy with the changes.</li> <li>On 2 December 2021, Woodside responded, noting the PPA's acceptance of the amendments, and confirmed it would send the PPA a copy of the final plan once approved.</li> <li>On 1 February 2023, Woodside emailed the PPA advising of the proposed activity (Appendix F, reference 4.22) and provided an updated Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.41).</li> <li>On 23 February 2023, PPA emailed Woodside and noted that as the activity occurs outside of the Port waters it has no comments.</li> <li>On 23 February 2023, Woodside emailed PPA to request that PPA provide a response to clarify which specific activity their feedback relates to.</li> <li>On 24 February 2023, PPA emailed Woodside to reconfirm that it notes most of the activities will be occurring outside of port waters with the exception of the SITI EP. PPA reconfirmed it has no comments on the proposed activity.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>PPA has requested information on the proposed activity:</p> <ul style="list-style-type: none"> <li>The risks of the activities being conducted in Port waters;</li> <li>The controls/mitigation strategies and monitoring programs that would be in place;</li> <li>Incident reporting requirements.</li> </ul> <p>PPA reconfirmed it has no comments on the proposed activity.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has provided PPA with additional information relating to its areas of interest, including providing a detailed briefing on the proposed activity.</p> <p>Woodside will send Pilbara Ports Authority's a copy of the First Strike Plan once accepted.</p> <p>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 <b>Section 7</b>).</p>	<p>No additional measures or controls are required.</p>



## Commonwealth and WA State Government Departments or Agencies – Environment

### Director of National Parks (DNP)

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to DNP on 31 August 2021 based on their function, interest, and activities.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to DNP over a 22 month period.

#### Summary of information provided and record of consultation:

- On 31 August 2021, Woodside emailed DNP advising of the proposed activity considering potential risks to Australian Marine Parks (Appendix F, reference 1.3), and provided a Consultation Information Sheet.
- On 13 September 2021, Woodside held a meeting with DNP and provided information relevant to DNP's interests for the proposed activity.
- On 20 September 2021, Woodside provided a copy of the presentation it presented on 13 September 2021.
- On 29 September 2021, DNP thanked Woodside for the meeting and for sending through the presentation slides.
- On 6 October 2021, DNP responded, noting that the activities may affect the values present in the Dampier Marine Park Habitat Protection Zone and the National Park Zone. The DNP noted it has no objections and claims at this time. The DNP noted points relating to the Montebello Marine Park, Dampier Marine Park, cultural heritage, water quality monitoring and guidance information.
- On 25 November 2021, Woodside responded to each of DNP's points with additional information.
- On 1 December 2021, DNP responded, thanking Woodside for the additional information. DNP noted that based on the information provided to date (including modelling, risks identified, controls proposed and consultation outlined in the spreadsheet), the DNP has no objections and claims at this time and no further comments in relation to the proposed EP.
- On 27 January 2023, Woodside emailed DNP with an update on the proposed activity (Appendix F, reference 4.1) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.1).
- On 24 February 2023, DNP emailed Woodside noting 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 1 December 2021:

- 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 and 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. Copies of DNP's previous responses have been received and have been addressed where relevant within each of the proposed EPs. Woodside clarified the OA that will apply for subsea infrastructure installation.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>The DNP has advised they have no further comment or objections and claims on the proposed activity. DNP have noted:</p> <ul style="list-style-type: none"> <li>• The proposed activities may affect the values present in the Dampier Marine Park Habitat Protection Zone and the National Park Zone.</li> <li>• Points relating to the Montebello Marine Park, Dampier Marine Park, cultural heritage, water quality monitoring and guidance information.</li> </ul> <p>The DNP has requested clarification of the activities that are encompassed within the OA for the proposed activity to ensure that relevant risks are assessed and effective mitigation applied.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside has responded to each of the DNP's points (relating to the Montebello Marine Park, Dampier Marine Park, cultural heritage, water quality monitoring and guidance information) with additional information. Woodside has provided a detailed briefing to DNP on the proposed activity.</p> <p>Woodside has provided clarification to DNP on the OA as requested (see above).</p> <p>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 <b>Section 7</b>).</p>	<p>The EP demonstrates that the risks and impacts of proposed planned activities within permitted areas of the Dampier Marine Park and Montebello Marine Park are reduced to ALARP and acceptable levels, including protection of Australian Marine Park values (<b>Section 6.9.4</b>). 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 <b>Section 6.8.2</b> and <b>Section 6.8.3</b>.</p> <p>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 (<b>Section 6.9.4</b>).</p> <p>Woodside will ensure the DNP is made aware of any incidences within a marine park for the activity, as per the commitment in the Oil Pollution First Strike Plan (<b>Appendix J</b>).</p> <p>No additional measures or controls are required.</p>
<b>Department of Biodiversity, Conservation and Attractions (DBCA)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to DBCA on 31 August 2021 based on their function, interest, and activities.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Woodside has addressed and responded to DBCA over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 31 August 2021, Woodside emailed DBCA advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet.</li> <li>On 16 September 2021, DBCA emailed Woodside:             <ul style="list-style-type: none"> <li>DBCA advised 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.</li> </ul> </li> <li>On 27 January 2023, Woodside emailed DBCA with an update on the proposed activity (Appendix F, reference 4.1) and provided an updated Consultation Information Sheet.</li> <li>On 8 February 2023, DBCA emailed Woodside:             <ul style="list-style-type: none"> <li>DBCA advised 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.</li> </ul> </li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>DBCA has advised it has no comments on the proposed activity.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>Woodside acknowledges that DBCA had no comment on the proposed activities.</p> <p>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 <b>Section 7</b>).</p>	<p>The EP demonstrates that the risks and impacts of proposed planned activities within permitted areas of the Montebello Islands MP are reduced to ALARP and acceptable levels. While impacts to State 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 <b>Section 6.8.2</b> and <b>Section 6.8.3</b>.</p> <p>No additional measures or controls are required.</p>
<b>Ningaloo Coast World Heritage Advisory Committee (NCWHAC)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to NCWHAC on 27 January 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up email seeking feedback on the proposed activities.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside has provided NCWHAC with the opportunity to provide feedback over a 5 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed NCWHAC with an update on the proposed activity (Appendix F, reference 4.11) and provided an updated Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.18).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Commonwealth and State Government Departments or Agencies – Industry</b>		
<b>Department of Industry, Science and Resources (DISR)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to DISR on 27 January 2023 based on their function, interest, and activities.</li> <li>Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>Woodside has provided the DISR with the opportunity to provide feedback over a 5 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 31 August 2021, Woodside emailed DISR advising of the proposed activity (Appendix F, reference 1.2).and provided a Consultation Information Sheet.</li> <li>On 27 January 2023, Woodside emailed DISR with an update on the proposed activity (Appendix F, reference 4.1).and provided an updated Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.1).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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,	No additional measures or controls are required.

	Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	
<b>Department of Mines, Industry Regulation and Safety (DMIRS)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to DMIRS on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has addressed and responded to DMIRS over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed DMIRS advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet.</li> <li>• On 24 September 2021, DMIRS responded, acknowledging receipt of the information. DMIRS noted that it did not require further information at that stage and requested pre-start notifications confirming the start date of the proposed activity and a cessation notification upon completion of the activity.</li> <li>• On 27 January 2023, Woodside emailed DMIRS with an update on the proposed activity (Appendix F, reference 4.1) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.1).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
DMIRS noted that it did not require further information at this stage and requested pre-start notifications confirming the start date of the proposed activity and a cessation notification upon completion of the activity.	Woodside will provide notifications to DMIRS prior to the commencement and at the end of the activity (Table 7-8). Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	Woodside will provide notifications to DMIRS prior to the commencement and at the end of the activity, as referenced at <b>Section 7</b> in this EP. Woodside considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

<b>Commonwealth Commercial fisheries and representative bodies</b>		
<b>North West Slope and Trawl Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to North West Slope and Trawl Fishery on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided North West Slope and Trawl Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 1.9) and provided a Consultation Information Sheet and fisheries maps (Appendix F, reference 1.22).</li> <li>• On 3 February 2023, Woodside emailed licence holders with an update on the proposed activity (Appendix F, reference 4.34) and provided an updated Consultation Information Sheet and fisheries maps.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.11).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<b>Western Deepwater Trawl Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> </ul>		

<ul style="list-style-type: none"> <li>• Consultation information provided to Western Deepwater Trawl Fishery on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Western Deepwater Trawl Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 1.9) and provided a Consultation Information Sheet and fisheries maps (Appendix F, reference 1.22).</li> <li>• On 3 February 2023, Woodside emailed licence holders with an update on the proposed activity (Appendix F, reference 4.34) and provided an updated Consultation Information Sheet and fisheries maps.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.11).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>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 (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<p><b>Western Tuna and Billfish Fishery</b></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Western Tuna and Billfish Fishery on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Western Tuna and Billfish Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul>		

<p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 31 August 2021, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 1.9) and provided a Consultation Information Sheet and fisheries maps (Appendix F, reference 1.22).</li> <li>On 3 February 2023, Woodside emailed licence holders with an update on the proposed activity (Appendix F, reference 4.35) and provided an updated Consultation Information Sheet and fisheries maps.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.33).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<b>Commonwealth Fisheries Association (CFA)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Consultation information provided to CFA on 31 August 2021 based on their function, interest, and activities.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Woodside addressed and responded to CFA over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 31 August 2021, Woodside emailed the CFA advising of the proposed activity (Appendix F, reference 1.14) and provided a Consultation Information Sheet and fisheries maps (Appendix F, reference 1.22 and 1.23).</li> <li>On 3 February 2023, Woodside emailed CFA on the proposed activity (Appendix F reference 4.34) and provided an updated Consultation Information Sheet and fisheries maps.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.11).</li> <li>On 22 February 2023, CFA emailed Woodside to advise that CFA is not resourced to give feedback on Woodside's EP.</li> </ul>		



<ul style="list-style-type: none"> <li>- CFA requested enquiries were directed to the associations that represent the directly affected fisheries/fishers.</li> <li>- CFA noted that the increasing volume of requests for consultation on EPs from oil and gas and more recently windfarm proposals are beyond the capacity of most associations.</li> <li>- CFA advised Woodside to be prepared to engage those associations on a fee for service basis.</li> <li>• On 15 March 2023, Woodside emailed CFA:             <ul style="list-style-type: none"> <li>- 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.</li> <li>- As per Woodside's ongoing consultation approach, feedback continues to be assessed and responded to, as required, through the life of an EP.</li> </ul> </li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>CFA provided feedback that it is not resourced to give feedback on Woodside's Environmental Plan and that it should consult with fishery license holders directly.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>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.</p> <p>Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<b>Tuna Australia</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Tuna Australia on 3 February 2023 based on their function, interest, and activities.</li> <li>• Woodside has addressed and responded to Tuna Australia over a 5 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 3 February 2023, Woodside emailed Tuna Australia on the proposed activity (Appendix F, reference 4.34) and provided an updated Consultation Information Sheet and fisheries maps.</li> </ul>		

- On 3 February 2023, Tuna Australia emailed Woodside to advise that it is unable to review its environmental plan submissions due to resourcing constraints and requested Woodside enter into a service agreement with Tuna Australia.
- On 15 March 2023, Woodside emailed Tuna Australia to advise the following:
  - 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 proposed activities, how Woodside develops its EPs and the extensive controls put in place to reduce impacts to as low as reasonable practical (ALARP) and acceptable levels, and its aim is to provide an efficient and simple way to obtain feedback and assist in the understanding of Woodside's activities.
  - 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:
  - Tuna Australia 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 does not have an expectation that organisations will provide a report or engage a consultant to engage in consultation or provide feedback on their behalf.
- Woodside is open to suggestions from Tuna Australia as to ways to improve efficiency and simplicity for feedback so that the process is manageable.
- Woodside reiterates 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.
- 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.
- On 26 May 2023, Woodside had a phone call with the Tuna Australia CEO and:
  - Explained that Woodside would like to discuss a path forward following receipt of Tuna Australia's Position Statement across its EP activities, including the activities proposed under this EP.
  - Noted Tuna Australia's correspondence to NOPSEMA and copied to Woodside dated 17 May 2023.
  - Noted Tuna Australia's previous EP consultation feedback that Woodside had responded to with respect to unrelated EPs.
  - Reiterated that Woodside does not expect Tuna Australia to provide a consultation report for each of its EPs and are concerned about this potential misalignment on expectations.
  - Tuna Australia advised it would like to discuss a way forward as woodside suggested and requested Woodside call Tuna on 30 May 2023, which Woodside committed to.
- On 2 June 2023, Woodside made a follow up phone call to Tuna Australia and left a voicemail covering the following:
  - Woodside called Tuna Australia on 2 June 2023 to follow up on phone call on 26 May 2023.
  - Woodside left a message requesting a call back and the opportunity to meet with Tuna Australia to discuss Woodside's portfolio of environment plan activities.
  - Woodside requested the opportunity to discuss options to consult with Tuna Australia and potentially lessen the burden on Tuna Australia for providing feedback on Woodside's EPs.

- Woodside offered the opportunity to take Tuna Australia through the entire EP portfolio, inclusive of decommissioning, so Tuna Australia could better assess the volume of activities.
- Woodside reiterated that there was no expectation for Tuna Australia to provide a consultation report on each individual EP, and potentially there is an opportunity for Woodside and Tuna Australia to work together on a more strategic approach.
- On 6 June 2023, Tuna Australia returned Woodside's call regarding an opportunity to meet to discuss a more strategic approach to consultation.
- On 8 June 2023, Tuna Australia returned Woodside's call and asked Woodside to call back on 14 June 2023.
- On 14 June 2023, Woodside returned Tuna Australia's phone call and left a message for Tuna Australia to call back.
- On 20 June 2023, Woodside and Tuna Australia held a meeting to discuss Tuna Australia's Industry Position Statement:
  - Woodside provided an overview of its activities and explained how recent case law and NOPSEMA guidance had resulted in Woodside undertaking consultation on the widest potential 'EMBA'.
  - Tuna Australia agreed to share with Woodside the name of any of the Offshore Sectors' titleholders that have entered into Tuna Australia's service agreement to date.
  - Tuna Australia also agreed to provide more detail on how Tuna Australia will distribute consultation materials to its membership/licence holders and the format of any report arising from the data collected.
  - Woodside committed to review Tuna Australia's Service Agreement.
- On 26 June 2023, Woodside emailed Tuna Australia following the meeting held on 20 June 2023 and recapped what was discussed.
  - Woodside thanked Tuna Australia for its time and stated it looked forward to continuing work with Tuna Australia.
  - Woodside directed Tuna Australia to contact the Woodside Feedback inbox for any further information.
- On 30 June 2023, Tuna Australia's CEO responded to Woodside's email of 26 June 2023. Tuna Australia:
  - Noted outcomes of the recent case law focussed on stakeholder engagement and ensuring energy companies meet regulatory requirements and NOPSEMA guidelines.
  - Requested Woodside send the recent case law.
  - Reached out to energy companies who have executed a services agreement with Tuna Australia and asked whether Tuna Australia could inform Woodside about their working relationship. Beach Energy confirmed it was happy for Tuna Australia to share its details.
  - Advised how it contacts concession holders and what it provides to them.
  - Provided a Tuna Australia contact who manages engagement with energy companies to progress a service agreement with Tuna Australia.
- On 17 July 2023, Woodside emailed Tuna Australia and confirmed:
  - Woodside's legal team had reviewed the Tuna Australia document and requested some minor changes to be made.
  - Woodside asked Tuna Australia if a marked up version of the Service Agreement would be the simplest way for Tuna Australia to review.
  - Woodside attached a Supplier Questionnaire as part of its due diligence process and asked Tuna Australia to complete the form.

<ul style="list-style-type: none"> <li>• On 18 July 2023, Tuna Australia emailed Woodside and confirmed:             <ul style="list-style-type: none"> <li>- Woodside should send a marked up version of the Service Agreement for TA to review.</li> <li>- Tuna Australia would fill out the Supplier Questionnaire and return in the next couple of days.</li> </ul> </li> <li>• On 18 July 2023, Woodside emailed Tuna Australia and sent a marked up version of the Service Agreement for Tuna Australia to review.</li> <li>• On 19 July 2023, Tuna Australia emailed Woodside and thanked it for sending through edits to Tuna Australia’s services agreement and commented:             <ul style="list-style-type: none"> <li>- Tuna Australia does not want any changes made to Schedule 2 of their Service Agreement and if Woodside has requirements outside of what Tuna Australia provides, then this will need to be discussed, agreed, and costed accordingly.</li> <li>- Tuna Australia would like further details on the Annual service for the Woodside Master Existing document including the rationale for the payment proposed.</li> <li>- Tuna Australia does not agree to a fixed price for the above bodies of work. Tuna Australia wants clarification on what the Annual service entails, and how the fixed priced value was arrived at.</li> <li>- Regarding the fixed fee for delivery of a specific consultation service, Tuna Australia need to remain flexible to clients needs and discuss additional works should they be required. Tuna Australia says it specified in the schedule that it would never proceed with more work or charge more money without approval and this should suffice for Woodside.</li> <li>- Tuna Australia does not agree on the current terms which have been changed in Item 2 of Schedule 1 and says it seeks a two year agreement as per the agreement template.</li> </ul> </li> <li>• On 2 August 2023, Woodside emailed Tuna Australia, thanked them for their response re the Service Agreement and advised that Woodside’s legal team will review and Woodside will revert as soon as possible. Woodside asked Tuna Australia to please complete the Supplier Questionnaire which was sent on 17 July 2023.</li> <li>• On 3 August 2023, Tuna Australia replied, apologised for the delay and sent the completed Supplier Questionnaire to Woodside.</li> <li>• On 8 August 2023, Tuna Australia responded in regards to another EP stating that as per its recent discussions with Woodside, Tuna Australia could consult on the EP once it had a services agreement in place.</li> <li>• On 23 August 2023, Tuna Australia emailed Woodside following up on Woodside’s consultation requirements with the tuna longline industry regarding another EP. Tuna Australia asked for clarity on whether Woodside was planning to engage Tuna Australia to consult on behalf of the tuna longline industry on this and other upcoming EPs that Woodside was seeking feedback on.</li> <li>• On 30 August 2023, Woodside emailed Tuna Australia and advised that Tuna Australia’s feedback on the Service Agreement had been discussed with Woodside’s legal team. Woodside asked for clarity on whether Tuna Australia would accept section 15: Ethical Business Practices. Once this had been accepted, Woodside could work through Tuna Australia’s other points.</li> <li>• On 4 September 2023, Tuna Australia emailed Woodside and advised that it had seen these anti bribery and corruption clauses included in the vendor registration process of other energy companies but had not seen it proposed inside an agreement before. Tuna Australia advised it was not against including them in the agreement, but asked if it was the best place for it.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>

<p>Tuna Australia responded, providing Woodside their position statement for engaging with energy companies seeking consultation advice from stakeholders on environmental plans and project proposals.</p> <p>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.</p> <p>Tuna Australia advised the name of another energy company where a service agreement had been executed.</p> <p>Tuna Australia committed to provide more information on how it would manage consultation distribution and a report under its service agreement.</p> <p>Tuna Australia and Woodside are working towards completing a service agreement.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>The fishery management area for the Western Tuna and Billfish Fishery, which Tuna Australia represents, overlaps both the Operational Area and EMBA. However, it is considered there is no potential for interaction within these areas as:</p> <ul style="list-style-type: none"> <li>• No fishing effort has occurred within or nearby to the Operational Area, with the nearest fishing effort occurring ~440 km away.</li> <li>• Fishery Status Report 2022 indicates current fishing effort is concentrated south-west of the Operational Area from Exmouth to Augusta (Patterson et al., 2020).</li> <li>• Presence of hydrocarbons in areas used by Western Tuna and Billfish Fishery may occur in the highly unlikely event of a release of marine diesel to the environment as a result of vessel collision (represented by the EMBA under a range of different weather and oceanic conditions).</li> <li>• However, given the distance from the Operational Area (~440 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.</li> </ul> <p>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 in order 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 Petroleum Activities Program of the SITI EP:</p> <ul style="list-style-type: none"> <li>• Vessels adhere to regulatory requirements for navigational safety.</li> <li>• Notification to AHS 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).</li> <li>• Establishment of temporary exclusion zones by relevant vessels which are communicated to marine users.</li> <li>• Vessels comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.</li> </ul>	<p>Woodside has assessed the relevancy of Commonwealth fisheries issues in <b>Section 4.9.2</b> of this EP.</p> <p>Existing controls adopted to manage potential interactions with commercial fisheries:</p> <ul style="list-style-type: none"> <li>• <b>PS 1.1</b> – vessels will comply with the Navigation Act and Marine Order 21</li> <li>• <b>PS 1.3</b> – notifications to AHO to allow generation of navigation warnings and Notice to Mariners</li> <li>• <b>PS 1.2</b> – establishment of temporary exclusion zones</li> <li>• <b>PS 1.4</b> – 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 notified prior to the commencement and at the end of the activity</li> <li>• Existing controls that directly address the points raised in Tuna Australia's Feedback</li> <li>• <b>PS 7.1</b> and <b>PS 7.2</b> vessels will comply with Marine orders 95 and 96</li> <li>• <b>PS 7.4</b> chemicals will be approved through the Woodside chemical assessment process</li> <li>• <b>PS 3.1</b> infrastructure will be placed in the planned locations</li> <li>• <b>PS 6.1.1</b> vessel will comply with EPBC Regulations 2000 – Part 8 Division 8.1</li> </ul> <p>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.</p> <p>No additional measures or controls are required.</p>
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	<p>Woodside also notes the following in relation to the points raised in Tuna Australia’s feedback:</p> <ul style="list-style-type: none"> <li>• Routine marine vessel discharges will be managed in accordance with legislative and regulatory requirements (e.g. marine orders).</li> <li>• Project vessels (excluding Pipelay Vessel) will avoid discharging sewage, grey water and food waste within the Montebello Marine Park.</li> <li>• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.</li> <li>• Dry pre-commissioning of Trunkline to be progressed as base-case with FCGT /wet pre-commissioning only carried out as contingency. If required, pre-commissioning procedures developed and followed so that appropriate chemical concentrations are maintained.</li> <li>• Seabed disturbance will be broadly managed by complying with legislative and regulatory requirements (e.g. sea dumping permit), ensuring infrastructure and material is placed on the seabed within the predefined design footprint using positioning technology, and implementation of the water quality monitoring program and Tiered Monitoring and Management Framework to manage water quality associated with Commonwealth dredging, spoil disposal and backfill activities to avoid impacts to benthic communities.</li> <li>• Acoustic emissions from vessels in field will be managed by complying with regulatory requirements (e.g. EPBC Regulations 2000 – Part 8 Division 8.1) and additional measures while operating in the PBW migration BIA during migration seasons (Apr-Jul &amp; Oct-Jan).</li> </ul> <p>Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, WAFIC and individual relevant licence holders.</p> <p>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</p>	
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	appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	
<b>State Commercial fisheries and representative bodies</b>		
<b><i>Mackerel Managed Fishery – Pilbara (Area 2 and 3)</i></b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Mackerel Managed Fishery (Area 2 and 3) on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up letters seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Mackerel Managed Fishery (Area 2 and 3) with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 1 September 2021, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 1.10) and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.24).</li> <li>• On 3 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.38) and provided a Consultation Information Sheet and fisheries maps.</li> <li>• On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.8).</li> </ul>		
<b><i>Summary of Feedback, Objection or Claim</i></b>	<b><i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i></b>	<b><i>Environment Plan Controls</i></b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>



<b>Pilbara Crab Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Pilbara Crab Managed Fishery on 1 September 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up letters seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Pilbara Crab Managed Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 1 September 2021, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 1.10) and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.26).</li> <li>• On 6 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.43) and provided a Consultation Information Sheet and fisheries map.</li> <li>• On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.30).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<b>Marine Aquarium Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Marine Aquarium Managed Fishery on 1 September 2021 based on their function, interest, and activities.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Woodside has sent follow up letters seeking feedback on the proposed activities.</li> <li>Woodside has provided the Marine Aquarium Managed Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 1 September 2021, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 1.10) and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.27).</li> <li>On 3 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.38) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.8).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow	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 <b>Section 7</b> ).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP. No additional measures or controls are required.
<b>Specimen Shell Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Consultation information provided to Specimen Shell Managed Fishery on 1 September 2021 based on their function, interest, and activities.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>Woodside has provided the Specimen Shell Managed Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p>		

<ul style="list-style-type: none"> <li>On 1 September 2021, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 1.10) and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.25).</li> <li>On 6 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.45) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.36).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.  Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.  No additional measures or controls are required.
<b>Nickol Bay Prawn Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Consultation information provided to Nickol Bay Prawn Managed Fishery on 1 September 2021 based on their function, interest, and activities.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Woodside has sent follow up letters seeking feedback on the proposed activities.</li> <li>Woodside has provided the Nickol Bay Prawn Managed Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 1 September 2021, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 1.10) and provided a Consultation Information Sheet and Fisheries Map (Appendix F, reference 1.28).</li> <li>On 6 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.45) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.36).</li> </ul>		

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP. No additional measures or controls are required.
<b>Pilbara Trawl Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Pilbara Trawl Fishery on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Pilbara Trawl Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 1.8) and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.23).</li> <li>• On 3 February 2023, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 4.37) and provided a Consultation Information Sheet and fisheries map.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.34).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.

	<p>accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as PS 1.4 in this EP.</p> <p>No additional measures or controls are required.</p>
<p><b>Pilbara Trap Fishery</b></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Pilbara Trap Fishery on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Pilbara Trap Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 1.18) and provided a Consultation Information Sheet and fisheries map (Appendix F, reference 1.23).</li> <li>• On 3 February 2023, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 4.37) and provided a Consultation Information Sheet and fisheries map.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.34).</li> </ul>		
<p><b>Summary of Feedback, Objection or Claim</b></p>	<p><b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b></p>	<p><b>Environment Plan Controls</b></p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>

<b>Pilbara Line Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Pilbara Line Fishery on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Pilbara Line Fishery with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 1.8) and provided a Consultation Information Sheet and Fisheries Map (Appendix F, reference 1.23).</li> <li>• On 3 February 2023, Woodside emailed Licence Holders advising of the proposed activity (Appendix F, reference 4.36) and provided a Consultation Information Sheet and fisheries map.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.6).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<b>West Coast Deep Sea Crustacean Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to West Coast Deep Sea Crustacean Managed Fishery on 3 February 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>Woodside has provided the West Coast Deep Sea Crustacean Managed Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 3 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.38) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.8).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP. No additional measures or controls are required.
<b>Onslow Prawn Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Onslow Prawn Managed Fishery on 6 February 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>Woodside has provided the Onslow Prawn Managed Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p>		

<ul style="list-style-type: none"> <li>On 6 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.45) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.36).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.  Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.  No additional measures or controls are required.
<b>Western Australian Sea Cucumber Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Western Australian Sea Cucumber Fishery on 6 February 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>Woodside has provided the Western Australian Sea Cucumber Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 6 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.45) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.36).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.



	<p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<p><b>Exmouth Gulf Prawn Managed Fishery</b></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Exmouth Gulf Managed Fishery on 6 February 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Exmouth Gulf Managed Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 6 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.43) and provided a Consultation Information Sheet and fisheries map.</li> <li>• On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.30).</li> </ul>		
<p><b>Summary of Feedback, Objection or Claim</b></p>	<p><b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b></p>	<p><b>Environment Plan Controls</b></p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>

<b>Gascoyne Demersal Scalefish Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Gascoyne Demersal Scalefish Fishery on 6 February 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Gascoyne Demersal Scalefish Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 6 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.45) and provided a Consultation Information Sheet and fisheries map.</li> <li>• On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.36).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-29) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<b>Shark Bay Crab Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Shark Bay Crab Managed Fishery on 3 February 2023 based on their function, interest, and activities.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>Woodside has provided the Shark Bay Crab Managed Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 3 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.43) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.30).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.  Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.  No additional measures or controls are required.
<b>Shark Bay Prawn Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Shark Bay Prawn Managed Fishery on 3 February 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>Woodside has provided the Shark Bay Prawn Managed Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 3 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.43) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.30).</li> </ul>		

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP. No additional measures or controls are required.
<b>Shark Bay Scallop Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Shark Bay Scallop Managed Fishery on 3 February 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Shark Bay Scallop Managed Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 3 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.43) and provided a Consultation Information Sheet and fisheries map.</li> <li>• On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.30).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by

	will apply its Management of Change and Revision process (see <b>Section 7</b> ).	planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP. No additional measures or controls are required.
<b>West Coast Rock Lobster Managed Fishery</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to West Rock Lobster Managed Fishery on 3 February 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>• Woodside has provided the West Rock Lobster Managed Fishery with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 3 February 2023, Woodside mailed letters to Licence Holders advising of the proposed activity (Appendix F, reference 4.43) and provided a Consultation Information Sheet and fisheries map.</li> <li>• On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.30).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP. Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP. No additional measures or controls are required.
<b>Western Australian Fishing Industry Council (WAFIC)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p>		

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to WAFIC on 31 August 2021 based on their function, interest, and activities.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside addressed and responded to WAFIC over a 22 month period.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed WAFIC advising of the proposed activity (Appendix F, reference 1.7) and provided a Consultation Information Sheet and fisheries maps (Appendix F, reference 1.22 and 1.23).
- On 10 September 2021, WAFIC responded, thanking Woodside for the information and requested the cumulative impact assessment for commercial fishing.
- On 19 October 2021, WAFIC emailed Woodside, asking for additional information on:
  - Dredge volume
  - A map of dredge spoil ground
  - During the pipeline installation, the expected time for the plume associated with seabed disturbance to settle after installation
  - Whether Woodside has considered fish spawning times during the development of the timing of the pipeline installation
  - Whether Woodside has considered the peak fishing times of commercial fishers, based on historical catch and effort data to avoid disturbance to commercial fishing operations
  - WAFIC also noted that notifications to stakeholders during this installation campaign will be very important and is happy to work with Woodside to work through the best approach for communicating with the commercial fishing industry.
- On 28 October 2021, Woodside emailed WAFIC, responding to each of the requests for additional information.
- On 23 November 2021, WAFIC emailed Woodside and asked for confirmation whether any feedback had been received from individual fishers. WAFIC also noted it was referring to the impacts from dredging plume impacts to spawning fish and/or areas closed such as a nursery area.
- On 6 December 2021, Woodside emailed WAFIC, advising it had not received responses from individual fishers and addressing the questions around plume impacts.
- On 3 February 2023, Woodside emailed WAFIC on the proposed activity (Appendix F, reference 4.31) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.5).
- 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 further 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.

- On 24 May 2023, WAFIC emailed Woodside to ask whether Woodside was planning to develop and implement a compensation framework Fishers' engagement.
  - WAFIC also suggested a different consulting approach with WAFIC and commercial fishers may need to be adopted as WAFIC had limited resources and other oil and gas proponents utilising WAFIC's fee-for-service model for EPs would be prioritised.
- On 27 June 2023, Woodside responded to WAFIC noting:
  - The Operational Area for the proposed activity was not classified as an area of high commercial fishing activity.
  - Commercial fishing vessels would not be excluded from the entire Operational Area for the total duration of the proposed activities, which will occur in multiple campaigns.
  - An interactive map showing the location of the proposed activities would be available on the Woodside website and would be updated throughout the proposed activities.

Woodside further stated it:

- Recognised rights of marine users and had taken steps to mitigate potential operational impacts on other marine users, including commercial fishing, shipping, and defence and petroleum activities and that it was required to reduce impacts to ALARP as set out in this EP.
  - Would consider claims from commercial fishing licence holders where there is economic loss; damage to fishing equipment, and demonstratable loss of catch but would not reimburse stakeholders for time spent attending an activity planning meeting.
  - Welcomed the opportunity to meet with WAFIC to provide an overview of current and upcoming EPs and would email proposed dates and details.
  - Woodside noted WAFIC had previously provided feedback for a number of other EPs and asked to be advised of any further feedback.
- On 25 July 2023, WAFIC's CEO sent a letter to Woodside's CEO to register significant frustration with regard to Woodside pursuing detailed responses to EPs or Decommissioning Proposals. WAFIC noted:
    - Since start of 2023, it had received more than 60 emails seeking feedback for activities proposed by Woodside;
    - Each email placed significant workload pressures on WAFIC, an organisation without sufficient resources to meet the deadlines required;
    - It had a number of other oil and gas titleholders operating in WA waters seeking similar feedback for their projects;
    - WAFIC requested Woodside to review its current consultation methodology for engagement with WAFIC.
  - On 16 August 2023, Woodside emailed WAFIC and confirmed a meeting for 28 August 2023. Woodside also provided an outline of existing EP consultation and upcoming in the coming weeks which were not relevant to this EP.
  - On 25 August 2023, Woodside's Executive Vice President replied to the letter from WAFIC CEO and noted:
    - Woodside's consultation is designed to ensure that relevant persons are identified and given sufficient information and a reasonable period to make an informed assessment of the possible consequences of the proposed activity
    - Woodside is keen to meet with WAFIC and to ensure Woodside's consultation with WAFIC and the commercial fishing sector achieves this outcome.
    - Woodside thanked WAFIC for sharing concerns and appreciated the opportunity to discuss these matters further and will be in touch to organise a suitable meeting date.
  - On 28 August 2023, Woodside met with WAFIC to discuss consultation on Environment Plans:

- WAFIC noted the high level of consultation currently being experienced and resourcing requirements. It noted it needed to prioritise consultation and had provided guidance to offshore proponents.
- Woodside discussed relevant persons consultation and acknowledged the high level of consultation to meet regulatory requirements and case law.
- WAFIC noted the importance of genuine consultation and building a relationship with the commercial fishing sector.
- Woodside sought to understand the most appropriate way to consult the commercial fishery sector.
- WAFIC and Woodside agreed a more strategic approach to consultation was required, noting the WAFIC fee for service model.
- Woodside recognised the need for WAFIC to be appropriately resourced to consider consultation materials.
- It was noted it is challenging to make assumptions about certain offshore activities, for example considering water depth or distance from shore, to reduce consultation fatigue.
- Pipeline installation, seismic and decommissioning are activities of the most interest to the commercial fishing sector.
- WAFIC noted consultation at the Offshore Project Proposal stage was effective in understanding projects and upcoming work scopes.
- Woodside and WAFIC agreed to identify a more strategic and tailored model to consult the commercial fishery sector.
- Woodside gave a presentation on Environment Plan activities, consultation requirements, the environment that may be affected, and consultation on another EP.
- On 1 September 2023, Woodside phoned WAFIC to discuss the consultation approach and fee-for-service for other Woodside EPs.
  - WAFIC confirmed as per its guideline consultation should occur with licence holders in the operational area, and agreed to distribute consultation materials under fee for service for Woodside EPs.
  - WAFIC confirmed it had sufficient existing information to consult with licence holders.
  - Woodside and WAFIC reiterated plans to develop a longer-term consultation model for future EPs.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>WAFIC has provided feedback relating to:</p> <ul style="list-style-type: none"> <li>• Importance and approach for Woodside to undertake notifications during the proposed activities.</li> <li>• WAFIC has requested additional information relating to</li> </ul>	<p>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.</p> <p>Woodside has provided consultation information to DPIRD, WAFIC and individual relevant licence holders. Woodside advised WAFIC it would welcome the opportunity to meet and provide an overview of its EPs.</p> <p>Woodside agreed to identify a more strategic and tailored model to consult the commercial fishery sector on environment plans.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF-- Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>Woodside has consulted WAFIC in the course of preparing this EP. Woodside has assessed the claims or objections raised by</p>



<ul style="list-style-type: none"> <li>• Cumulative impact assessment for commercial fishing.</li> <li>• Dredge volume</li> <li>• Dredge spoil ground</li> <li>• Expected time for the plume associated with seabed disturbance to settle after installation</li> <li>• Fish spawning times, and</li> <li>• Peak fishing times of commercial fishers.</li> <li>• Feedback from individual fishers</li> <li>• Expectations around a different consulting model suggesting priority would be given to Titleholders who embrace fee-for-service.</li> <li>• WAFIC and Woodside are working towards a more strategic approach and tailored model to consult the commercial fishery sector.</li> </ul>	<p>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 <b>Section 7</b>).</p>	<p>WAFIC. No additional measures or controls have been put in place.</p> <p>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.</p>
<p><b>Western Rock Lobster Council</b></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Western Rock Lobster Council on 23 February 2023 based on their function, interest, and activities. .</li> <li>• Woodside has addressed and responded to Western Rock Lobster Council over a 5 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p>		

<ul style="list-style-type: none"> <li>On 27 February 2023, Western Rock Lobster Council emailed Woodside requesting a map that includes all relevant projects Woodside is undertaking and consultation time frames for cascading to their members.</li> <li>On 1 March 2023, Woodside emailed Western Rock Lobster Council advising of proposed activity (Appendix F, reference 5.51) and provided a Consultation Information Sheet and fisheries map.</li> <li>On 14 March 2023, Woodside sent a follow-up email to Western Rock Lobster Council (Appendix F, reference 5.52).</li> <li>On 20 March 2023, Western Rock Lobster responded, thanking Woodside for their email and requested an extension of 2 weeks on the feedback dates.</li> <li>On 30 March 2023, Woodside emailed Western Rock Lobster Council to confirm an additional two weeks for feedback.</li> <li>On 12 April 2023, Woodside emailed Western Rock Lobster Council to follow up on feedback relating to the proposed activity.</li> <li>On 10 May 2023, Woodside had a phone call with the Western Rock Lobster Council to follow up on feedback relating to a number of EPs, including the activities proposed under this EP. Woodside referred to its email dated 12 April 2023 which referenced the EPs Woodside had provided consultation information to the Western Rock Lobster Council for. The Western Rock Lobster Council advised it would come back to Woodside the same day if it had any feedback.</li> <li>On 11 May 2023, Western Rock Lobster Council emailed Woodside to advise it didn't have any comments on the EPs, including the activities proposed under this EP.</li> <li>On 11 May 2023, Woodside responded to thank the Western Rock Lobster Council for its response and confirmed Woodside will continue to engage the Western Rock Lobster Council with respect to applicable EPs.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>Western Rock Lobster Council emailed Woodside to request a map of all the activities Woodside is undertaking that it's relevant to and if there are timeframes in relation to each activity.</p> <p>Western Rock Lobster Council confirmed it didn't have any comments on the proposed activities.</p> <p>Whilst feedback has been received, there were no objections of claims.</p>	<p>Western Rock Lobster Council confirmed it didn't have any comments on the proposed activities.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF-- Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Western Rock Lobster Council's functions, interests or activities.</p> <p>No additional measures or controls are required.</p>

<b>Recreational marine users and representative bodies</b>		
<b>Karratha Recreational Marine Users</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Karratha recreational marine users on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Karratha Recreational Marine Users with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Karratha Recreational Marine Users, advising of the proposed activity (Appendix F, reference 1.12) and provided a Consultation Information Sheet.</li> <li>• On 3 February 2023, Woodside emailed Karratha Recreational Marine Users on the proposed activity (Appendix F, reference 4.32) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.35).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	No additional measures or controls are required.
<b>Exmouth Recreational Marine Users</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Exmouth recreational marine users on 3 February 2023 based on their function, interest, and activities. .</li> <li>Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>Woodside has provided the Exmouth Recreational Marine Users with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 3 February 2023, Woodside emailed Exmouth Recreational Marine Users on the proposed activity (Appendix F, reference 4.33) and provided a Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.7).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	No additional measures or controls are required.
<b>Pilbara/Kimberley Recreational Marine Users</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Pilbara/Kimberley recreational marine users on 6 February 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up letter seeking feedback on the proposed activities.</li> <li>Woodside has addressed and responded to Pilbara/Kimberley recreational marine users over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 6 February 2023, Woodside mailed letters to Pilbara / Kimberley Recreational Marine Users on the proposed activity (Appendix F, reference 4.44) and provided a Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.37).</li> </ul>		

<ul style="list-style-type: none"> <li>The Lombadina Aboriginal Corporation is listed as part of the Pilbara/Kimberley Recreational Marine Users in Table 5.3.</li> <li>On 20 July 2023, Woodside emailed Lombadina advising a meeting would be sought. The same day a text message was sent asking about availability.</li> <li>On 22 July 2023, a second text was sent about setting up a meeting.</li> <li>On 25 July 2023, an email was sent to Lombadina Aboriginal Corporation following up on the SITI EP summary which had been sent the previous week and also providing NOPSEMA guidelines on consultation. A request was also made about if there were other Traditional Custodian groups or individuals who needed to be consulted.</li> <li>On 26 July 2023, Woodside spoke with Lombadina Director Tony Sibosado and provided an explanation about the EMBA. Tony asked if this was the pipeline EP and Woodside confirmed it was and was seeking any feedback. Woodside indicated it was happy to one day meet with all the Directors along with SMEs to explain the EMBA however was seeking feedback on the SCA SITI EP. Tony advised there were no concerns with SCA SITI.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	No additional measures or controls are required.
<b>Gascoyne Recreational Marine Users</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Gascoyne recreational marine users on 6 February 2023 based on their function, interest, and activities.</li> <li>Woodside has sent follow up email(s) seeking feedback on the proposed activities.</li> <li>Woodside has provided the Gascoyne Recreational Marine Users with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 6 February 2023, Woodside sent a letter to Gascoyne Recreational Marine Users on the proposed activity (Appendix F, reference 4.42) and provided a Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up letter (Appendix F, reference 5.9).</li> </ul>		

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	No additional measures or controls are required.
<b>Recfishwest</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Recfishwest on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has addressed and responded to Recfishwest over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Recfishwest advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet.</li> <li>• On 24 November 2021, Recfishwest emailed Woodside to request an informal meeting to discuss timelines, impacts, stakeholder needs, an overview of works on the Burrup and how Recfishwest and their fishing community may be able to 'plug into the bigger picture'. Recfishwest also suggested merit in Woodside providing a briefing to some Recfishwest staff.</li> <li>• On 22 August 2022, Woodside held a meeting with Recfishwest to provide an update on the broader Scarborough project and related Trunkline activities, including the proposed activity under this EP. <ul style="list-style-type: none"> <li>- On the same day, Woodside provided a follow-up copy of the Consultation Information Sheet via email.</li> </ul> </li> <li>• On 2 September 2022, Recfishwest emailed correspondence to Woodside containing feedback on the proposed activity. Recfishwest advised that in review of the work planned in the environmental plans for stakeholder consultation, Recfishwest do not object to the steps taken by Woodside to address concerns the recreational fishing sector might have. <ul style="list-style-type: none"> <li>- Additionally, Recfishwest requested they are consulted on any upcoming offshore exploration activities, irrespective of the distance from shore and that all charts are updated, so recreational fishers can locate the areas.</li> <li>- Recfishwest requested to be kept advised of the commencement of the activities so it is able to communicate this to the recreational fishing community.</li> </ul> </li> <li>• On 27 January 2023, Woodside emailed Recfishwest advising of the proposed activity (Appendix F, reference 4.4) and provided a Consultation Information Sheet.</li> </ul>		

- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.12).

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>Recfishwest has provided feedback and advised that:</p> <ul style="list-style-type: none"> <li>Recfishwest do not object to the steps taken by Woodside to address concerns the recreational fishing sector might have.</li> <li>Recfishwest also requested they are consulted on any upcoming offshore exploration activities, irrespective of the distance from shore and that all charts are updated, so recreational fishers can locate the areas.</li> </ul>	<p>Woodside has responded to Recfishwest's feedback and has confirmed it will keep Recfishwest updated on project updates.</p> <p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>Woodside has consulted Recfishwest in the course of preparing this EP. Woodside has assessed the claims or objections raised by Recfishwest. No additional measures or controls have been put in place.</p> <p>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.</p>

**Marine Tourism Association of WA**

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to Marine Tourism of WA on 31 August 2021 based on their function, interest, and activities.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent follow up emails seeking feedback on the proposed activities.
- Woodside has provided the Marine Tourism of WA with the opportunity to provide feedback over a 22 month period.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed Marine Tourism advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet.
- On 27 January 2023, Woodside emailed Marine Tourism Association of WA advising of the proposed activity (Appendix F, reference 4.4) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.12).

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	No additional measures or controls are required.
<b>WA Game Fishing Association</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to WA Game Fishing Association on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided the WA Game Fishing Association with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed the WA Game Fishing Association advising of the proposed activity (Appendix F, reference 1.12) and provided a Consultation Information Sheet.</li> <li>• On 27 January 2023, Woodside emailed the WA Game Fishing Association advising of the proposed activity (Appendix F, reference 4.4) and provided a Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.12).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside</p>	No additional measures or controls are required.



will apply its Management of Change and Revision process (see **Section 7**).

**Titleholders and Operators**

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

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Consultation information provided to Chevron on 31 August 2021 based on their function, interest, and activities. .
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to Chevron over a 22 month period.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed Chevron advising of the proposed activity (Appendix F, reference 1.15) and provided a Consultation Information Sheet and Titleholder map (Appendix F, reference 1.15.1).
- On 10 October 2022, Chevron emailed Woodside and provided details of its own proposed activity and asked for details of any activities Woodside plans to undertake which may be affected by Chevron’s activities.
- On 21 November 2022, Woodside discussed Chevron’s email via a phone call. Woodside followed the call with an email and confirmed the SITI teams have a monthly SIMOPS meeting with Chevron with the intent of developing SIMOPS plans; however, there had been no mention of Chevron’s seismic survey.
  - Woodside confirmed once Chevron sends a shapefile of its Seismic Survey Operational Area it would send Chevron back the mapped over SITI Ops Area to understand the overlap.
  - Woodside noted as a way forward it would investigate controls or updates to the EP to cover the activity and discuss as required.
  - Woodside also noted that Chevron would advise on likelihood the activity would slip to Jan-April 2025 and there would be no overlap with current Scarborough schedule.
- On 22 November 2022, Chevron thanked Woodside for the discussion and shared the spatial files for the seismic survey operation area. Chevron noted its project team indicated the overlap in timing of activities should be able to be managed through SIMOPS plans without any issues. Chevron shared it had also suggested that the Wheatstone 4D MSS is raised in the Chevron/Woodside monthly SIMOPS meeting to see if they can talk through any specifics.
- On 29 November 2022, Woodside shared with Chevron a figure which shows Woodside’s overlapping operational areas, as well as overlap with the PBW Migration BIA and Montebello Marine Park Multiple Use Zone.
- On 1 December 2022, Chevron thanked Woodside for its email.
- On 27 January 2023, Woodside emailed Chevron advising of the proposed activity (Appendix F, reference 4.5) 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 5.13)
- 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 to advise it had reviewed the consultation information and to request information on the following:
  - Chevron's Janso-lo Compression Project team has raised a query on the potential pipeline routing in proximity of Chevrons assets and requested the previously requested shapfiles for the pipeline route be provided. They also asked for an appropriate focal point for the Chevron team to liaise with on the technical detail.
  - Chevron also raised a general comment relating to a number of Woodside activities:
    - 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 our 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 provided the focal point for the Chevron team to liaise with on the technical detail.
  - 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.
  - Subsequent phone calls and discussions in relation to potential concurrent activities between Chevron and Woodside have taken place and will continue to occur as part of ongoing SIMOPS meetings and implementation of EP Controls .
- On 16 June 2023, Chevron emailed Woodside with regards to Chevron's previous feedback on this EP noting that no further responses had been received from Woodside and asked for the information requested, or for a timeline.
- On 22 June 2023, Woodside emailed Chevron a copy of the response Woodside emailed to Chevron on 6 April 2023 in response to Chevron's comments.
- On 4 July 2023, Woodside commenced discussions with Chevron with regards to the SITI EP OMR requirement for an offset distance between the Trunkline installation vessel and seismic vessel
- On 13 July 2023, Woodside emailed Chevron information about control opportunities to address the WEL SITI EP OMR.

- On 13 July 2023, Chevron emailed Woodside advising they would respond shortly and requesting the modelling report.
- On 14 July 2023, Woodside emailed Chevron stating it had not released the noise modelling report to other stakeholders and asking if further information was required to develop behavioural response onset limits.
- On 14 July 2023, Chevron emailed Woodside its position with reason to support including:
  - Pygmy Blue Whale migration periods.
  - Woodside's request for offset distances.
  - Proposed OMR response.
  - The Wheatstone 4D MSS distance to behavioural response threshold and the Castorone distance to behavioural response threshold.
  - Further work Chevron may look to undertake
- On 19 July 2023, Woodside emailed Chevron a response to its previous email.
- On 25 July 2023, Woodside emailed Chevron following a meeting around noise control and ongoing concerns around the Castorone model validation study. Woodside provided further technical information on updated controls around seismic noise.
- On 26 July 2023, Chevron responded to Woodside thanking them for the information and stating they would consider and respond soon.
- On 26 July 2023, Woodside responded to Chevron reiterating the use of the ongoing consultation process for feedback received while EPs are under assessment or post acceptance and the existence of current Chevron / Woodside interface forums where concurrent activities are discussed.
- On 26 July 2023, Chevron emailed Woodside in response to Woodside's email from 25 July stating:
  - Wheatstone 4D MSS does not consider January as a peak temporal sensitivity for Pygmy Blue whale southern migration in the Montebello region
  - Chevron's position is concurrent seismic and pipelay activities are ALARP and Acceptable if they are timed to occur outside the peak PBW migratory period
  - Chevron notes Woodside's response is inconsistent with the previously proposed correspondence by Chevron such as the proposed control has failed to consider the relevant directivity and site-specific nature of sound propagation, Woodside are not willing to share the modelling used to inform how this control will be derived and Woodside do not intend to develop a collaborative Chevron WHS 4D adaptive management plan (or similar)
  - The proposed control significantly limits the flexibility of managing and operating both activities concurrently and therefore is not considered reasonably practicable
  - Chevron has timed the Wheatstone 4D MSS to commence in January and therefore avoid the peak Pygmy Blue Whale migration periods
  - Any potential operational standby associated with meeting the requirement of Woodside's proposed control as the potential for the Wheatstone 4D MSS to be pushed out into the April pygmy blue whale migration
  - Woodside's proposed control is outside the peak PBW period and largely outside the defined migratory BIA for PBW
  - Chevron proposed updates to the noise control originally sent through by Woodside
- On 27 July 2023, Woodside emailed Chevron thanking them for the feedback, discussing changes to the control wording and addressing Chevron's other claims.
- Between 11 September and 2 October 2023, Woodside and Chevron liaised on cumulative impact potential between the SITI activities and the Wheatstone 4D MSS.

<ul style="list-style-type: none"> <li>On 4 October 2023, Chevron emailed Woodside advising that Wheatstone 4D Marine seismic survey had been cancelled for the 2023/24 season and would be deferred to a later date, most likely the next acquisition season of 2024/25. The decision was made due to conflicting marine activities during the acquisition period and was confounded by uncertainty over various pending EP considerations. Chevron noted it would inform NOPSEMA about this that day.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>Chevron has provided feedback on the proposed activity relating to:</p> <ul style="list-style-type: none"> <li>Timing of activities</li> <li>Proximity of the pipeline route from Chevron's assets</li> <li>Ongoing technical discussion regarding the activity at the regular Chevron/Woodside SIMOPS meeting.</li> </ul> <p>Chevron has requested additional information relating to:</p> <ul style="list-style-type: none"> <li>GIS shapefiles for the proposed activity</li> <li>Contact details for a technical contact from Woodside</li> <li>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</li> <li>Its position on its upcoming activities and background on</li> </ul>	<p>Woodside has addressed Chevron's feedback and provided GIS shapefiles and a response relating to its requests regarding activity timing, pipeline route and ongoing technical discussions for the proposed activities. Woodside has responded to Chevron's request 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.</p> <p>Ongoing technical discussions relating to SIMOPS between Woodside and Chevron activities will continue to occur in regular interface meetings.</p> <p>Based on the decision by Chevron to cancel the Wheatstone 4D MSS activity for 2023/2024 season no further engagements with Chevron are planned at this time.</p> <p>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 <b>Section 7</b>).</p>	<p>No additional measures or controls are required.</p>

<p>whales, offset distances and behavioural response thresholds</p> <ul style="list-style-type: none"> <li>• Request for the SITI EP Noise Modelling report</li> <li>• Chevron requested Woodside's collaborative support to ensure any agreed operational mitigation measures are underpinned by robust science</li> <li>• Chevron communicated to Woodside it was cancelling the Wheatstone 4D MSS for the 23/24 acquisition season.</li> </ul>		
<b>Santos</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Santos on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided Santos with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Santos advising of the proposed activity (Appendix F, reference 1.15) and provided a Consultation Information Sheet and Titleholder map (Appendix F, reference 1.15.1).</li> <li>• On 27 January 2023, Woodside emailed Santos advising of the proposed activity (Appendix F, reference 4.6) and provided a Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.14).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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	No additional measures or controls are required.

	will apply its Management of Change and Revision process (see <b>Section 7</b> ).	
<b>Eni Australia</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to ENI Australia on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has addressed and responded to ENI over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed ENI Australia advising of the proposed activity (Appendix F, reference 4.8) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.20).</li> <li>• On 22 February 2023 ENI Australia emailed Woodside advising it has no comments and that it requested to remain updated on the proposed activity.</li> <li>• On 23 February 2023, Woodside confirmed Woodside will provide ENI with commencement and cessation of activity notifications relating to the proposed activities.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
Eni Australia has no comments but requested to be updated on the proposed activity.	<p>Eni Australia has advised it has no comments on the proposed activity. Woodside will provide commencement and cessation of activity notifications relating to the proposed activities.</p> <p>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 <b>Section 7</b>).</p>	<p>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 <b>PS 1.4</b> in the EP (also refer to Table 7-8 in the EP)</p> <p>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.</p>
<b>Western Gas</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p>		

<ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Western Gas on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided Western Gas with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Western Gas advising of the proposed activity (Appendix F, reference 1.15) and provided a Consultation Information Sheet and Titleholder map (Appendix F, reference 1.15.1).</li> <li>• On 27 January 2023, Woodside emailed Western Gas advising of the proposed activity (Appendix F, reference 4.6) and provided a Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.14).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Vermilion Oil &amp; Gas</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to Vermilion Oil &amp; Gas on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has addressed and responded to Vermilion Oil &amp; Gas over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed Vermilion Oil &amp; Gas advising of the proposed activity (Appendix F, reference 1.15) and provided a Consultation Information Sheet and Titleholder map (Appendix F, reference 1.15.1).</li> <li>• On 5 October 2021, Vermilion responded, noting it did not have issue with the current plan.</li> </ul>		

<ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed Vermilion Oil &amp; Gas advising of the proposed activity (Appendix F, reference 4.7) and provided a Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.19).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Vermilion Oil & Gas's functions, interests or activities. No additional measures or controls are required.
<b>Jadestone Energy</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Consultation information provided to Jadestone Energy on 31 August 2021 based on their function, interest, and activities.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>Woodside has provided Jadestone Energy with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 31 August 2021, Woodside emailed Jadestone Energy advising of the proposed activity (Appendix F, reference 1.15) and provided a Consultation Information Sheet and Titleholder map (Appendix F, reference 1.15.1).</li> <li>On 27 January 2023, Woodside emailed Jadestone Energy advising of the proposed activity (Appendix F, reference 4.7) and provided a Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.19).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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	No additional measures or controls are required.



	will apply its Management of Change and Revision process (see <b>Section 7</b> ).	
<b>KUFPEC</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to KUFPEC on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided the KUFPEC with the opportunity to provide feedback over a 22 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed KUFPEC advising of the proposed activity (Appendix F, reference 1.15) and provided a Consultation Information Sheet and Titleholder map (Appendix F, reference 1.15.1).</li> <li>• On 27 January 2023, Woodside emailed KUFPEC advising of the proposed activity (Appendix F, reference 4.6) and provided a Consultation Information Sheet. Woodside welcomed feedback on the proposed activity</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.14).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Coastal Oil and Gas</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Coastal Oil and Gas on 11 November 2022 based on their function, interest, and activities.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>Woodside has provided Coastal Oil and Gas with the opportunity to provide feedback over a 8 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 11 November 2022, Woodside emailed Coastal Oil and Gas advising of the proposed activity (Appendix F, reference 2.16) and provided a Consultation Information Sheet and Titleholder map (Appendix F, reference 1.18).</li> <li>On 27 January 2023, Woodside emailed Coastal Oil and Gas advising of the proposed activity (Appendix F, reference 4.7) and provided a Consultation Information Sheet. Woodside welcomed feedback on the proposed activity.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.19).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Bounty Oil &amp; Gas</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Bounty Oil and Gas on 27 January 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>Woodside has provided Bounty Oil and Gas with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed Bounty Oil &amp; Gas advising of the proposed activity (Appendix F, reference 4.7) and provided a Consultation Information Sheet. Woodside welcomed feedback on the proposed activity.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.19).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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	No additional measures or controls are required.

	accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	
<b>KATO Energy</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to KATO Energy on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided KATO Energy with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed KATO Energy advising of the proposed activity (Appendix F, reference 4.7) and provided a Consultation Information Sheet. Woodside welcomed feedback on the proposed activity.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.19).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Exxon Mobil Australia</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Exxon Mobil Australia on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside has provided Exxon Mobil Australia with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed Exxon Mobil advising of the proposed activity (Appendix F, reference 4.6) and provided a Consultation Information Sheet. Woodside welcomed feedback on the proposed activity.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.14).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Shell Australia</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Shell Australia on 27 January 2023 based on their function, interest, and activities.</li> <li>Woodside has addressed and responded to Shell Australia over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed Shell Australia advising of the proposed activity (Appendix F, reference 4.6) and provided an updated Consultation Information Sheet.</li> <li>On 7 February 2023, Shell emailed advising it has no comments on the proposed activity.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>Shell has advised it has no comments on the proposed activity.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	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 <b>Section 7</b> ).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Shell Australia's functions, interests or activities.

<b>Finder Energy</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Finder Energy on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided Finder Energy with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed Finder Energy advising of the proposed activity (Appendix F, reference 4.6) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.14).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7.13</b> ).	No additional measures or controls are required.
<b>OMV Australia / Sapura OMV Upstream (WA)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to OMV Australia / Sapura OMV Upstream (WA) on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided OMV Australia / Sapura OMV Upstream (WA) with the opportunity to provide feedback over a 6 month period.</li> </ul>		

<p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed OMV Australia / Sapura OMV Upstream (WA) advising of the proposed activity (Appendix F, reference 4.6) and provided an updated Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.14).</li> </ul>		
<p><b>Summary of Feedback, Objection or Claim</b></p>	<p><b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b></p>	<p><b>Environment Plan Controls</b></p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>No additional measures or controls are required.</p>
<p><b>Lightmark Enterprises</b></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Lightmark Enterprises on 27 January 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>Woodside has provided Lightmark Enterprises with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed Lightmark Enterprises advising of the proposed activity (Appendix F, reference 4.10) and provided an updated Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.21).</li> </ul>		
<p><b>Summary of Feedback, Objection or Claim</b></p>	<p><b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b></p>	<p><b>Environment Plan Controls</b></p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>No additional measures or controls are required.</p>

<b>INPEX Alpha</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to INPEX Alpha on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided the INPEX Alpha with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed INPEX advising of the proposed activity (Appendix F, reference 4.9) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.38).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>JX Nippon Oil &amp; Gas Exploration Corporation</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to JX Nippon on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has addressed and responded to JX Nippon over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed JX Nippon advising of the proposed activity (Appendix F, reference 4.8) and provided an updated Consultation Information Sheet.</li> </ul>		

<ul style="list-style-type: none"> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.20).             <ul style="list-style-type: none"> <li>- Woodside also emailed JX Nippon via its website to obtain more up to date contact details for providing the EP Consultation Information.</li> </ul> </li> <li>• On 23 February 2023, Woodside also sent a letter to JX Nippon advising of the proposed activity (Appendix F, reference 5.39)             <ul style="list-style-type: none"> <li>- Woodside also sent an email advising of the proposed activity (Appendix F, reference 5.40).</li> </ul> </li> <li>• On 24 February 2023, JX Nippon emailed Woodside seeking confirmation of the location and topic of the activity so as to obtain the correct contact.</li> <li>• On 24 February 2023, Woodside emailed JX Nippon to advise on the location of the specific proposed activity and resent the consultation information.</li> <li>• On 24 February 2023 JX Nippon emailed Woodside and copied in the appropriate contact for reviewing the consultation information.</li> <li>• On 28 February 2023, Woodside emailed JX Nippon to advise it has updated its stakeholder distribution list.</li> <li>• On 10 March 2023, Woodside followed up with JX Nippon via email (Appendix F, reference 5.49).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
JX Nippon emailed Woodside seeking confirmation of the location and topic of the activity so as to obtain the correct contact. Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	No additional measures or controls are required.
<b>BP Developments Australia (BP)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to BP on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided BP with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed BP advising of the proposed activity (Appendix F, reference 4.8) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.20).</li> </ul>		



<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Carnarvon Energy</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Carnarvon Energy on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided Carnarvon Energy with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed Carnarvon Energy advising of the proposed activity (Appendix F, reference 1.79) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.20).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>PE Wheatstone (PEW)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to PEW on 27 January 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>Woodside has provided the PEW with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed PEW advising of the proposed activity (Appendix F, reference 4.8) and provided an updated Consultation Information Sheet</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.20).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7.13</b> ).	No additional measures or controls are required.
<b>Kyushu Electric Wheatstone (KEW)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to KEW on 27 January 2023 based on their function, interest, and activities.</li> <li>Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>Woodside has provided KEW with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed KEW advising of the proposed activity (Appendix F, reference 1.79) and provided an updated Consultation Information Sheet</li> <li>On 22 February 2023, Woodside sent a follow up email Appendix F, reference 5.20).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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	No additional measures or controls are required.

	accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	
<b>Fugro Exploration</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Fugro Exploration on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided the Fugro Exploration with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed Fugro Exploration advising of the proposed activity (Appendix F, reference 4.8) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.20).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Peak Industry Representative bodies</b>		
<b>Australian Petroleum Production &amp; Exploration Association (APPEA)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to APPEA on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> </ul>		

<ul style="list-style-type: none"> <li>Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>Woodside has provided the APPEA with the opportunity to provide feedback over a 23 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 31 August 2021, Woodside emailed APPEA advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet.</li> <li>On 27 January 2023, Woodside emailed APPEA advising of the proposed activity (Appendix F, reference 4.1) and provided an updated Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.1).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Traditional Custodians</b>		
<b>Karajarri Traditional Lands Association (KTLA)</b>		
<p>KTKA is established under the Native Title Act 1993 by the Karajarri people to represent the Karajarri people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.</p> <p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with KTLA for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:</p> <p><b>Sufficient Information:</b></p> <ul style="list-style-type: none"> <li>Woodside sought direction on KTLA's preferred method of consultation. Woodside has offered to hold meetings at the location and time of KTLA 's choosing, with KTLA nominated representatives (including face-to-face meetings with the Board). These meetings did not occur due to a lack of response to Woodside's requests. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 11A consultation.</li> <li>Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to KTLA. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.</li> <li>Confirmed the purpose of consultation and set out in detail what is being sought through consultation.</li> <li>Asked for the consultation and information sheets to be distributed to members and individuals.</li> <li>Provided NOPSEMA's guidelines and brochure on consultation.</li> <li>Advised that KTLA can request that particular information provided in the consultation not be published (to align with 11A(2)(4))</li> </ul> <p><b>Reasonable Period:</b></p>		

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside commenced consultation with KTLA in January 2023, providing a reasonable opportunity for input since that time.

Woodside asked KTLA if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on KTLA functions, interests or activities.

**Summary of information provided and record of consultation:**

- **(1)** On 23 January 2023, Woodside emailed KTLA advising of the proposed activity (Appendix F, reference 3.12) 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 KTLA and its members may have within the EMBA, information on how KTLA would like to engage, and requested that KTLA provide information to members. No response was received.
- **(1)** On 27 January 2023, Woodside emailed KTLA following up on the 23 January email and voice messages left on answering machine seeking confirmation information received and whether KTLA require further information. No response was received.
- **(1)** On 24 March 2023, Woodside emailed KTLA following up on the information sent through in relation to the proposed activity and seeking feedback, offering in person discussions at any time suitable to the organisation. No response was received.
- **(1)** On 18 April 2023, Woodside emailed KTLA following up on the information sent through in relation to the proposed activity and seeking feedback, again offering discussion at any suitable time including travelling to their office in person if desired. No response was received.
- **(1)** On 19 April 2023, Woodside attempted to contact KTLA via the Karajarri Traditional Lands Association Facebook page.
- On 19 April 2023, Woodside made contact with KTLA via phone.
- **(1 & 2)** On 19 April 2023, Woodside emailed KTLA to follow up on a phone call (earlier on 19 April; 2023) and proposed a face-to-face meeting with the Board on 1 May 2023, noting that they would be guided by the Board. Woodside requested submissions of a budget to meet KTLA's meeting costs. No response was received.
- **(1 & 2)** On 28 April 2023, Woodside emailed KTLA including the email chain demonstrating efforts to engage and notifying KTLA that the next step is for the EP for the proposed activity to be submitted to NOPSEMA for technical assessment. It stated that the EP submission is imminent and requested any priority feedback as a priority to reflect in this submission, noting that feedback is also welcome over the life of the EP.
- **(2)** On 2 May 2023, a Woodside representative visited the KTLA Kimberley office and met the KTLA project manager to discuss the information provided on 24 February 2023, KTLA Legal representative joined the meeting.
  - KTLA representative said the legal representative would draft a letter requesting funds to enable KTLA to hold a meeting and seek external advice. Woodside agreed in principle to providing funds.
  - To date, no request has been received
- **(1)** On 7 June 2023, Woodside emailed KTLA inviting them to community information drop-in sessions and requesting they inform members or any others who may want to understand Woodside activities relating to this and other EP's.

<ul style="list-style-type: none"> <li>On 18 July 2023, Woodside emailed KTLA NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside’s request that KTLA advise of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received</li> <li><b>(1)</b> On 26 July 2023, Woodside emailed KTLA Woodside’s planned Program of Ongoing Engagement with Traditional Custodians.</li> <li><b>(1)</b> On 18 September 2023, Woodside emailed KTLA advising of the planned start date for the activity, and once again requesting if KTLA was aware of any other people with whom Woodside should consult, and if there was any information KTLA wished to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 02 October 2023. The Summary Information Sheet for this activity was attached (Appendix F, Reference 5.70). The email included links to NOPSEMA brochures on consultation and described the purpose of consultation. No response was received to this email.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) KTLA have not responded to any Woodside communications despite follow up, have not provided feedback, objections, or claims to date in response to the information provided since consultation began in January 2023.</p> <p>(2) KTLA indicated a request for funding for consultation would be submitted to Woodside, but to date this request has not been received.</p>	<p>(1) Woodside demonstrated reasonable efforts to engage in genuine two-way dialogue. Woodside has provided sufficient information to allow for an informed assessment of the possible impacts and risks of the activity on functions, interests or activities and a reasonable period of time to consult. KTLA as had a reasonable opportunity to participate in consultation. Between 23 January and October 2023, there has been an exchange of 14 emails, 2 phone calls, attempted contact via Facebook, one informal discussion and an invitation to a community consultation session relating to the activity. KTLA has not provided feedback in response to these attempts. The details of these engagements are described in the consultation summary above. Relevant persons are not obligated to respond to a titleholder’s request to participate in the consultation process. A titleholder is not required to wait indefinitely for a response where sufficient information and reasonable period of time has been afforded to the relevant person.</p> <p>(2) Woodside supports ongoing engagement post regulation 11A consultation. On 19 April 2023 and 2 May 2023, KTLA said they would seek funding support from Woodside and were developing paperwork/proposal for sending to Woodside. Woodside re-iterated that they supported funding requests and re-stated that KTLA and Woodside were able to consult throughout the life of the EP. Since May 2023, KTLA has not progressed with any funding requests or other proposals. KTLA has had reasonable</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside is implementing a program to actively support Traditional Custodians’ capacity for ongoing engagement and consultation on environmental plans referenced as <b>PS 16.2.1</b> in this EP. This includes addressing KTLA’s resourcing issue for ongoing consultation via a Framework Agreement.</p>

	<p>time since May (5 months) to progress this matter. Woodside has assessed the Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with KTLA and address appropriate support for resourcing, separate from consultation under Reg 11A for this EP which is closed. Whilst not raised by KTLA, Woodside does not consider KTLA's funding request as a pre-requisite for consultation under regulation 11A. Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members. Woodside will develop and forward a draft Framework Agreement for KTLA's consideration within the next 2 months. The Framework Agreement is an effective mechanism for social investment opportunities.</p> <p>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 <b>Section 7.15</b>).</p>	
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**Nyangumarta Karajarri Aboriginal Corporation (NKAC)**

NKAC is established under the Native Title Act 1993 by the Nyangumarta and Karajarri people to represent the Nyangumarta and Karajarri people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with NKAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5 of the EP. Specifically:

• **Sufficient Information:**

- Woodside sought direction on NKAC's preferred method of consultation.. Woodside has offered to locate meetings at the location of NKAC 's choosing, with NKAC nominated representatives (including face-to-face meetings with the Board). These meetings did not occur due to a lack of response to Woodside's requests. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 11A consultation.
- Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to NKAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.
- Confirmed the purpose of consultation and set out in detail what is being sought through consultation.

- Asked for the consultation and information sheets to be distributed to members and individuals.
- Provided NOPSEMA's guidelines and brochure on consultation.
- Advised that NWAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))
- **Reasonable Period:**
  - Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
  - Woodside commenced consultation with NKAC in January 2023, providing a reasonable opportunity for input since that time.

Woodside asked NKAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NKAC functions, interests or activities.

**Summary of information provided and record of consultation:**

The Nyangumarta Karajarri Aboriginal Corporation's nominated contact representative as listed under the Office of the Registrar of Indigenous Corporations, and the General Report 2021 published 25 May 2022, is the Kimberley Land Council with listed email address. Woodside therefore directs correspondence through this channel in accordance with NKAC preference.

- **(1)** On 23 January 2023, Woodside emailed NKAC (via their representative KLC (Kimberley Land Council)) advising of the proposed activity (Appendix F, reference 3.15) 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 NKAC and its members may have within the EMBA, information on how NKAC would like to engage, and requested that NKAC provide information to members as required. No response was received.
- **(1)** On 27 January 2023, Woodside emailed KLC/NKAC following up on email of 23 January 2023 and voice message, seeking to confirm they had received information and seeking to understand whether the group would like to discuss the information in further details.
- On 30 January 2023, KLC emailed Woodside to advise that the information had been forwarded to NKAC Directors for their consideration and that Woodside would be contacted by the Directors at their convenience.
- On 24 February 2023, KLC advised via phone that the information had been forwarded to NKAC Directors for their consideration.
- **(1)** On 24 March 2023, Woodside emailed KLC/NKAC following up on the information sent through in relation to the proposed activity and seeking feedback offering in person discussions at any time suitable to the organisation.
- On 24 March, KLC emailed Woodside to advise that they had forwarded the email to the Directors for their consideration.
- On 24 March 2023, Woodside emailed KLC thanking them for their assistance.
- **(1)** On 18 April 2023, Woodside emailed KLC/NKAC following up on the information sent through in relation to the proposed activity and seeking feedback, noting that Woodside had not yet been contacted by Directors.
- On 18 April 2023, the KLC representative emailed Woodside to advise that they had once more passed on the information and had discharged their duties as contact person, and it was up to NKAC Directors to manage consultation from here.



<ul style="list-style-type: none"> <li>• <b>(1)</b> On 28 April 2023, Woodside emailed KLC/NKAC including the email chain demonstrating efforts to engage and notifying that the next step is for the EP for the proposed activity to be submitted to NOPSEMA for technical assessment. It stated that the EP submission is imminent and requested any priority feedback as a priority to reflect in this submission, noting that feedback is also welcome over the life of the EP. No response was received</li> <li>• <b>(1)</b> On 24 July 2023, Woodside emailed KLC/NKAC NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside’s request that KLC/NKAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.</li> <li>• <b>(1)</b> On 25 July 2023, KLC emailed Woodside confirming they had passed on the email received from Woodside to NKAC.</li> <li>• <b>(1)</b> On 26 July 2023, Woodside emailed KLC/NKAC Woodside’s planned Program of Ongoing Engagement with Traditional Custodians.</li> <li>• <b>(1 )</b> On 18 September 2023, Woodside emailed KLC/NKAC advising of the planned start date for the activity, and once again requesting if KLC/NKAC was aware of any other people with whom Woodside should consult, and if there was any information KLC/NKAC wished to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023. The Summary Information Sheet for this activity was attached (Appendix F, Reference 5.68). The email included links to NOPSEMA brochures on consultation and described the purpose of consultation. No response was received to this email. No response was received.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) NKAC have not responded to any Woodside communications despite follow up, have not provided feedback, objections, or claims to date in response to the information provided since consultation began in January 2023.</p>	<p>(1) Woodside demonstrated reasonable efforts to engage in genuine two-way dialogue. Woodside has provided sufficient information to allow for an informed assessment of the possible impacts and risks of the activity on functions, interests or activities and a reasonable period of time to consult. NKAC has had a reasonable opportunity to participate in consultation. Between 23 January 2023 and October 2023 there has been an exchange of 13 emails and a phone call. Details of these engagements are described in the consultation summary above. NKAC has not provided feedback in response to these attempts. Relevant persons are not obligated to respond to a titleholder’s request to participate in the consultation process. A titleholder is not required to wait indefinitely for a response where sufficient information and reasonable period of time has been afforded to the relevant person. 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 <b>Section 7.15</b>).</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>Woodside is implementing a program to actively support Traditional Custodians’ capacity for ongoing engagement and consultation on environmental plans referenced as <b>PS 16.2.1</b> in this EP.</p>

<b>Nyangumarta Warrarn Aboriginal Corporation (NWAC)</b>		
NWAC is established under the Native Title Act 1993 by the Nyangumarta people to represent the Nyangumarta people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.		
Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with NWAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:		
<ul style="list-style-type: none"><li>• <b>Sufficient Information:</b><ul style="list-style-type: none"><li>- Woodside Sought direction on NWAC's preferred method of consultation. Woodside has offered to locate meetings at the location of NWAC 's choosing, with NWAC nominated representatives (including face-to-face meetings with the Board). These meetings did not occur due to a lack of response to Woodside's requests. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 11A consultation.</li><li>- Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to NWAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.</li><li>- Confirmed the purpose of consultation and set out in detail what is being sought through consultation.</li><li>- Asked for the consultation and information sheets to be distributed to members and individuals.</li><li>- Provided NOPSEMA's guidelines and brochure on consultation.</li><li>- Advised that NWAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))</li></ul></li><li>• <b>Reasonable Period:</b><ul style="list-style-type: none"><li>- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.</li><li>- Woodside commenced consultation with NWAC in January 2023, providing a reasonable opportunity for input since that time.</li></ul></li></ul>		
Woodside asked NWAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.		
Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).		
Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NWAC functions, interests or activities.		
<b>Summary of information provided and record of consultation:</b>		
<ul style="list-style-type: none"><li>• On 23 January 2023, Woodside emailed NWAC advising of the proposed activity (Appendix F reference 3.9) 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.</li></ul>		

- The email requested information on the interests that NWAC and its members may have within the EMBA, information on how NWAC would like to engage, and requested that NWAC provide information to members as required.
- On 27 January 2023, Woodside emailed NWAC following up on email of 23 January 2023 to confirm they had received information and seeking to make further contact. Woodside offered a telephone conversation or an in-person discussion.
- (1) On 24 March 2023, Woodside emailed NWAC following up on previous emails and seeking to make further contact, again offering a mobile phone number, and inviting a discussion. No response was received
- (1) On 18 April 2023, Woodside left a voice mail with and emailed Yamatji Marlpa Aboriginal Corporation (YMAC), asking whether they had an alternate contact for NWAC. No response was received.
- (1) On 28 April 2023, Woodside emailed NWAC included the email chain demonstrating efforts to engage and notifying that the next step was for the EP for the proposed activity to be submitted to NOPSEMA for technical assessment.
  - It stated that the EP submission is imminent and requested any feedback as a priority to reflect in this submission, noting that feedback was also welcome over the life of the EP.
- (1) On 18 July 2023, Woodside emailed NWAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that NWAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received.
- (1) On 26 July 2023, Woodside emailed NWAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- (1) On 18 September 2023, Woodside emailed NWAC advising of the planned start date for the activity, and once again requesting if NWAC were aware of any other people with whom Woodside should consult, and if there was any information NWAC wished to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023, but reiterated that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached (Appendix F, Reference 5.69). The email included links to NOPSEMA brochures on consultation and described the purpose of consultation.
  - (1) On 6 October 2023, Woodside phoned YMAC to ensure contact details were correct and whether YMAC would be able to assist with strategy to enable response from NWAC, YMAC were not able to assist.
  - (1) On 9 October 2023, Woodside attended the NWAC offices in Broome to talk through information and arrange a meeting with the Board. No one was in attendance at the office.
  - (1) On 11 October 2023, Woodside emailed NWAC requesting to be contacted by the General Manager, indicated that Woodside is keen to meet with the Board and members to provide updates on activities.
  - (1) On 11 October 2023, Woodside texted the NWAC contact to requests a meeting to talk through activities and plan to hear from the NWAC Board. Woodside received a response that the contact person for NWAC make would contact the following day. No further contact was received.
  - (1) On 12 October 2023, Woodside attended the NWAC office, no one was in attendance.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
(1) NWAC has not responded to any Woodside communications despite follow up, has not provided feedback, objections to date or claims in response to the	(1) Woodside demonstrated reasonable efforts to engage in genuine two-way dialogue. Woodside has provided sufficient information to allow for an informed assessment of the possible impacts and risks of the activity on functions, interests or activities and a reasonable period of time to	(1) Existing controls considered sufficient, as described in Section 6.

<p>information provided since consultation began in January 2023.</p>	<p>consult. NWAC has had a reasonable opportunity to participate in consultation. Between 23 January 2023 and October 2023 there have been 7 emails, 2 drop ins to the Broome office, 2 requests for telephone calls, 2 text messages and 2 calls to YMAC to determine whether there were alternative contacts for NWAC. The details of these engagements are described in the consultation summary above. NWAC has not provided feedback in response to these attempts. Relevant persons are not obligated to respond to a titleholder's request to participate in the consultation process. A titleholder is not required to wait indefinitely for a response where sufficient information and reasonable period of time has been afforded to the relevant person.</p> <p>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 <b>Section 7.15</b>).</p>	
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**Wanparta Aboriginal Corporation**

Wanparta is established under the Native Title Act 1993 by the Ngarla people to represent the Ngarla people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Wanparta for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

- Sufficient Information:
  - Woodside Sought direction on Wanparta's preferred method of consultation. This resulted in a face-to-face meeting being coordinated at location of Wanparta 's choosing, with Wanparta nominated representatives This meeting included Woodside presenting information in a format and style that was readily accessible and appropriate. Provided Consultation Information Sheet and Consultation Summary Sheets developed by Indigenous staff to Wanparta. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.
  - Articulated planned and unplanned environmental risks and impacts, with proposed controls.
  - Confirmed the purpose of consultation and set out in detail what is being sought through consultation.
  - Asked for the consultation and information sheets to be distributed to members and individuals.

- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan"
- Provided response to questions asked about the activity through consultation. Through these questions, WAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
- Advised that Wanparta can request that particular information provided in the consultation not be published (to align with 11A(2)(4))
- Reasonable Period:
  - Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
  - Woodside commenced consultation with Wanparta in January 2023. Woodside has addressed and responded to Wanparta over 9 months, demonstrating a "reasonable period" of consultation.

Woodside asked Wanparta if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. Wanparta has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Wanparta functions, interests or activities.

**Summary of information provided and record of consultation:**

- On 23 January 2023, Woodside emailed Wanparta Aboriginal Corporation (Wanparta) advising of the proposed activity (Appendix F, reference 3.10) 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 Wanparta and its members may have within the EMBA, information on how Wanparta would like to engage, and requested that Wanparta provide information to members as required.
- On 27 January 2023, Woodside emailed Wanparta following up on the email of 23 January 2023 to confirm they had received information and seeking to make further contact, offering to connect via phone or an in-person meeting if desired.
- On 31 January 2023, Wanparta responded to acknowledge receipt of material and informed that it was passed on to Directors who will advise whether any further engagement is required.
- On 31 January 2023, Woodside emailed the Wanparta contact person and thanked them for their assistance.
- On 24 February 2023, Woodside emailed the Wanparta contact person (Appendix F, reference 5.42) asking for feedback on the information already provided regarding Scarborough activities and providing additional information on other decommissioning and drilling activities and requesting feedback. Woodside again requested information on the interests that Wanparta and its members may have within the EMBA, information on how Wanparta would like to engage, and requested that Wanparta provide information to other individuals as required. Woodside also asked if anything further could be done to facilitate consultation.
- On 2 March 2023, Wanparta emailed Woodside to state that all information had been received and passed onto Directors for comment.
- On 24 March 2023, Woodside emailed Wanparta asking whether the Directors had any questions or would like to have further discussions. An offer of phone discussion, online or in person meeting was made.

- On 27 March 2023, Wanparta contacted Woodside via email to clarify that the Directors had not provided any questions or feedback.
- On 18 April 2023, Woodside emailed Wanparta following up on previous emails and seeking to make further contact, again asking for advice on how Wanparta would like to engage.
- On 28 April 2023, Woodside emailed Wanparta including the email chain demonstrating efforts to engage and notifying that the next step is for the EP for the proposed activity to be submitted to NOPSEMA for technical assessment.
  - It stated that the EP submission is imminent and requested any feedback as a priority to reflect in this submission, noting that feedback is also welcome over the life of the EP.
- On 6 July 2023, Woodside emailed Wanparta following up on other EPs and noting that Woodside would like to provide a complete overview of all planned activities to the Board and members. Woodside wrote that it wanted to understand the impact on interests/activities and cultural values, and to hear any concerns.
- On 18 July 2023, Woodside emailed Wanparta NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that Wanparta advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.
- On 21 July 2023, Wanparta emailed Woodside noting they were planning two Board meetings in order to hear from the multiple proponents that have identified Wanparta as Relevant Persons and inviting Woodside to present at one of these meetings.
- On 24 July 2023, Woodside emailed Wanparta seeking to understand whether Wanparta would like a complete overview of relevant activities which would include this EP.
- On 24 July 2023, Wanparta emailed Woodside confirming they would like a complete overview of all activities which would include this EP at a meeting on 31 August 2023.
- On 25 July 2023, Woodside emailed Wanparta accepting the proposed date and proposing a longer time on the agenda.
- On 26 July 2023, Woodside emailed Wanparta Woodside's planned Program of Ongoing Engagement with Traditional Custodians and confirming Woodside's preference to attend the 31 August 2023 Board meeting.
- **(1, 2, 3 & 4)** On 31 August 2023, Woodside met with Wanparta Board and members in South Hedland, Woodside:
  - Described the EP framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of EPs.
  - Displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023/24.
- Woodside provided an overview of the broader Scarborough Project and overview of activities.
  - Described each proposed activity, (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video to show the pipelay which was designed for public audience.
  - Described the types of vessels involved.
  - Described the planned impacts and respective controls of the above activities including: the presence of vessels, seabed disturbance, underwater noise, discharge from vessels, emissions to air and external lighting.
  - Described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.

- Displayed and spoke to the EMBA for each proposed activity, 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.
- Stated that Woodside wanted to understand how the functions, activities, or interests of Wanparta and the people it represents may be impacted by any of those activities.
- Specifically asked the following:
  - How could these activities impact your cultural values, interests, and activities - does protecting the environment do enough to protect your cultural values?
  - What are your concerns about the proposed activities and what do you think we should do about them?
  - Is there anything you would like included in the EPs before submission?
  - Is there anyone else Woodside should consult with about the activities?
- Advised that Woodside will continue to take feedback from Wanparta for the life of the EP.
- Provided personal contact details for further feedback. Woodside provided NOPSEMA's contact details, should Wanparta desire to provide feedback directly to the regulator.
- At the 31 August 2023 meeting Wanparta asked/noted:
  - **(1)** What chemicals in the water may be discharged during commissioning.
    - Woodside responded that biocide, oxygen scavenger and corrosion inhibitor, have low concentrations. They are carefully regulated to make sure they don't persist in the environment.
  - **(2)** Wanparta stated that water is extremely important to Ngarla people, and they feel a responsibility to look after the ocean and lore. They noted the spiny bream, octopus, stingray and kestrel as totemic species
  - **(4)** Wanparta would like to discuss a program of support for rangers with Woodside.
    - Woodside responded that they would come back to Wanparta with regards to training and future support for a Ranger Program.
  - **(4)** Wanparta would like to engage in an annual meeting with Woodside.
  - **(3 & 4)** Wanparta broke for a closed session, when asked if there were any stories that could be told, on return the Wanparta through their lawyer gave verbal support for this EP activity and said they are keen to continue a relationship with Woodside.
- On 14 September 2023, Woodside emailed Wanparta following up on previous consultation and information discussed at the 31 August 2023 meeting. Woodside advised of the planned start date for the activity, and once again requested if Wanparta was aware of any other people with whom Woodside should consult, and if there was any information Wanparta wished to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023, but reiterated that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached (Appendix F, reference 5.71). No response was received to this email.
- sent through an environment plan and activity dates for this EP, asking Wanparta for any further feedback. The email also contained within NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that Wanparta advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.
- On 14 September 2023, Wanparta thanked Woodside and confirmed receipt of emails.
- On 4 October 2023, Woodside phoned Wanparta, to check in generally and inform about upcoming Eps. A discussion was had around, Wanparta Rangers, a tour of Karratha Gas Plant and School kids visit to Perth Office.
- On 4 October 2023, Woodside emailed Wanparta following up with a summary of the previous phone call. The outcomes of the phone discussion were:
  - **(4)** Wanparta's interest in a Wanparta Ranger program and EP funding.
  - **(4)** Wanparta's interest in a Karratha Gas Plant visit, as well as possible school visits and Perth Office visits.

<ul style="list-style-type: none"> <li>- Wanparta's request for updates on EPs unrelated to this one.</li> <li>- <b>(4)</b> Woodside's query into Wanparta's thoughts on a formal authorisation/consent/endorsement process regarding future EPs.</li> <li>• On 6 October 2023, Wanparta emailed Woodside thanking Woodside for the 4 October email and summary of discussion had and stating that Wanparta will bring all the 4 October 2023 items to the Board for further consideration and will revert shortly after.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) During face-to-face engagement, related to this activity and others Wanparta requested further information on topics related to this proposed activity which was responded to during the meeting:</p> <ul style="list-style-type: none"> <li>• What chemicals in the water may be discharged during commissioning.</li> <li>• the importance of water was emphasised by the group.</li> </ul> <p>(2) Wanparta stated that water and the ocean is extremely important to them, and they have a responsibility to look after ocean and lore. They noted the bream, octopus, stingray and kestrel as totemic species</p> <p>(3) At the 31 August 2023 meeting, Wanparta expressed support for the EP, Wanparta said they had no concerns regarding the activity for now and wanted to be kept updated on any changes.</p> <p>(4) Wanparta expressed interest in a range of social investment opportunities including a ranger program. Wanparta stated their</p>	<p>(1) Woodside responded to Wanparta's requests for further information during face-to-face engagements, and no further information was requested on these topics.</p> <p>(2) Woodside assessed Wanparta's interest in water and the species described to represent potential cultural values</p> <p>(3) Wanparta is supportive of this EP submission. Any future feedback may be provided in ongoing consultation throughout the life of the EP.</p> <p>(4) Woodside is continuing to work with Wanparta regarding social investment opportunities. Separate from consultation under Reg 11A, Woodside has commenced discussion with Wanparta about a framework agreement for ongoing engagement. Wanparta will discuss the proposal with their Board during an October meeting, Woodside will follow up on a response and seek to reach a Framework Agreement during 2023. The Framework Agreement is an effective mechanism for social investment opportunities, including for the ranger program. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (pictures, maps, video) and project attendance allowing opportunity to ask questions and seek further understanding.</p> <p>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,</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside updated Section 4.9 to record WAC's interests and potential cultural values and assessed potential impact on these, including controls, in section 6.10.</p> <p>(3) Not required.</p> <p>(4) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environmental plans referenced as <b>PS 16.2.1</b> in this EP. This includes continued engagement through a proposed Framework Agreement which will be applied to ongoing consultation.</p>



<p>interest in ongoing engagement with Woodside.</p>	<p>Woodside will apply its Management of Change and Revision process (see <b>Section 7.15</b>).</p>	
<p><b>Kariyarra Aboriginal Corporation</b>                  Kariyarra is established under the Native Title Act 1993 by Kariyarra people to represent the Kariyarra people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.</p>		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Kariyarra for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p> <p><b>Sufficient Information:</b></p> <ul style="list-style-type: none"> <li>• Woodside sought direction on Kariyarra’s preferred method of consultation. Woodside has offered to locate meetings at the location of Kariyarra ’s choosing, with Kariyarra nominated representatives(including face-to-face meetings with the Board and CEO). These meetings have not occurred despite consistent requests and a reasonable period for consultation elapsing (9 months). As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 11A consultation.</li> <li>• Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to Kariyarra. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.</li> <li>• Confirmed the purpose of consultation and set out in detail what is being sought through consultation.</li> <li>• Asked for the consultation and information sheets to be distributed to members and individuals.</li> <li>• Woodside has provided NOPSEMA’s Brochure “Consultation on offshore petroleum environment plans” and Guideline “Guideline: Consultation in the course of preparing an environment plan” Advised that Kariyarra can request that particular information provided in the consultation not be published (to align with 11A(2)(4))</li> </ul> <p><b>Reasonable Period:</b></p> <ul style="list-style-type: none"> <li>• Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside commenced consultation with Kariyarra in January 2023. Woodside has responded to Kariyarra over 9 months, demonstrating a “reasonable period” of consultation.</li> </ul> <p>Woodside asked Kariyarra if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.</p> <p>Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).</p> <p>Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Kariyarra functions, interests or activities.</p> <p><b>Summary of information provided and record of consultation:</b></p>		

- **(1)** On 23 January 2023, Woodside emailed the Kariyarra Aboriginal Corporation advising of the proposed activity (Appendix F, reference 3.11) 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 Kariyarra and its members may have within the EMBA, information on how Kariyarra would like to engage, and requested that Kariyarra provide information to other individuals as required.
- On 23 January 2023 Woodside sent an email to an alternative address for the Kariyarra Aboriginal Corporation 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 Kariyarra and its members may have within the EMBA, information on how Kariyarra would like to engage, and requested that Kariyarra provide information to other individuals as required.
- On 24 January 2023, the Kariyarra Relationship Support Manager provided contact details for the Chief Executive Officer.
- On 24 January 2023, Woodside emailed the Kariyarra Relationship Support Manager and thanked them for their assistance.
- **(1)** On 24 January 2023, Woodside emailed the Kariyarra CEO 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 (Appendix F, reference 3.13).
  - The email requested information on the interests that Kariyarra and its members may have within the EMBA, information on how Kariyarra would like to engage, and requested that Kariyarra provide information to other individuals as required. No response was received.
- **(1)** On 24 March 2023, Woodside emailed the Kariyarra CEO asking whether any questions have arisen, and offering the opportunity to provide further detail to CEO or board if it is of interest. No response was received.
- On 18 April 2023, Woodside emailed the Kariyarra CEO following up on previous emails and seeking to make further contact. An offer of an online or in-person meeting was made. No response was received.
- **(1)** On 28 April 2023, Woodside emailed Kariyarra including the email chain demonstrating efforts to engage and notifying that the next step is for the EP for the proposed activity to be submitted to NOPSEMA for technical assessment.
  - It stated that the EP submission is imminent and requested any priority feedback as a priority to reflect in this submission, noting that feedback is also welcome over the life of the EP. No response was received.
- **(1)** On 2 May 2023 Woodside phone KAC and left a message for a return call to discuss EP, no return call was received.
- **(1)** On 3 May 2023 Woodside phoned KAC and left a message for a return call to discuss EP, no return call was received.
- **(1)** On 9 May 2023, Woodside drove to South Hedland Office of KAC in an attempt to meet with the CEO. The CEO was unavailable, Woodside left contact details and proposed meeting times.
- **(1)** On 10 May 2023, Woodside spoke to the KAC CEO and asked for a meeting whilst still in South Hedland. Woodside advised that the submission of the EP was imminent, and that Woodside wished to consult and was continuing to seek KACs feedback. The CEO advised he had a full calendar and no time to meet however would try to respond as soon as time permitted and asked when the EPs were due for submission.
- **(1)** On 12 May 2023, Woodside emailed KAC to confirm telephone conversation of 10 May and to advise that the EPs are due for submission in the following two weeks.
- On 6 July 2023, Woodside followed by phone regarding the two EPs provided to KAC on 20 June 2023 and advising Woodside would be happy to meet or consult with KAC and provide a complete overview of planned activities.
- **(1)** On 18 July 2023, Woodside emailed KAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that KAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.

- **(1)** On 26 July 2023, Woodside emailed Kariyarra Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 31 August 2023, KAC emailed Woodside apologising for not responding sooner and noting that KAC were seeking legal advice on matters.
- On 31 August 2023, Woodside emailed KAC acknowledging their response.
- **(4)** On 31 August 2023, KAC (via legal representative) emailed requesting information about another activity, indicating they required costs to be met for KAC to be engaged in consultations with Woodside.
- **(4)** On 10 September 2023, Woodside emailed KAC (via legal representative) indicating they were awaiting internal advice about funding. Woodside confirmed that they have been covering cost of consultation with other Aboriginal Corporation Board meetings.
- **(4)** On 10 September 2023, KAC emailed Woodside informing that further consultation could move forward with appropriate funding.
- **(4)** On 13 September 2023, KAC (via legal representative) emailed requesting a response to funding as soon as possible to enable attendance at a meeting with some KAC members.
- **(4)** On 13 September 2023, KAC (via legal representative) emailed Woodside requesting confirmation that consultation costs would be covered by Woodside. KAC also advised that the Kariyarra have sea rights referenced in their native title evidence. The KAC lawyer affirmed that further consultation will be required now that KAC has a legal advisor.
- **(4)** On 13 September 2023, Woodside emailed KAC (via legal representative) with information on another Scarborough EP and noting that Woodside in principle agreed to the request for funding, however would require reasonable quotes from KAC to provide a formal a response. Woodside committed to following up and confirming that Woodside are looking for positive engagement with KAC.
- **(1)** On 13 September 2023, KAC (via legal representative) emailed Woodside requesting a copy of the information sheet for another Scarborough EP previously provided by Woodside to KAC.
- **(1)** On 18 September 2023, Woodside emailed KAC advising of the planned start date for the activity, and once again requesting if KAC was aware of any other people with whom Woodside should consult, and if there was any information KAC wished to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 02 October 2023, but reiterated that Woodside would take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached (Appendix F, reference 5.67).
- **(2, 3 & 4)** On 22 September 2023, KAC (via legal representative) emailed Woodside attaching a letter and Woodside policy documents. The letter set out the following:
  - Requesting that a meeting with KAC at a suitable time with an agreed Agenda be arranged, including preparation of "co-management agreement".
  - **(4)** An Agreement which provides the most effective tool for the effective and ongoing consultation by Woodside with KAC.
  - **(2)** Noting that KAC asserted sea rights in their native title claim. (*Note: Native title was found not to exist in the sea in the KAC determination found by the Federal Court*).
  - **(2)** An agreed budget to fund (among other things) preparation of Agreement, meetings and specialist advice.
  - Contact protocols going forward.
- **(2)** On 28 September 2023, KAC (via legal representative) emailed Woodside a funding request for fees and disbursements, however did not provide a reasonable basis for this quote.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) Woodside and KAC have engaged in a two-way dialogue, but KAC has not provided feedback, objections to date or claims in response to the information provided since consultation began in January 2023.</p> <p>(2) KAC has requested funding to hold meetings, prepare an agreement and fund expertise as required by KAC.</p> <p>(3) KAC has asserted sea rights over their native title claim area</p> <p>(4) KAC have noted that they will engage in ongoing consultation on matters with Woodside through an Engagement Protocol.</p>	<p>(1) Woodside demonstrated reasonable efforts to engage in genuine two-way dialogue. Woodside has provided sufficient information to allow for an informed assessment of the possible impacts and risks of the activity on functions, interests or activities and a reasonable period of time to consult. KAC as had a reasonable opportunity to participate in consultation. Between 23 January and 31 August 2023, when KAC informed Woodside they had sought legal advice. To that date there has been an exchange of 14 emails, 2 phone calls, 2 drop ins at the KAC office. The details of these engagements are described in the consultation summary above. KAC has not provided feedback in response to these attempts. Relevant persons are not obligated to respond to a titleholder's request to participate in the consultation process. A titleholder is not required to wait indefinitely for a response where sufficient information and reasonable period of time has been afforded to the relevant person.</p> <p>(2) Woodside has communicated on several occasions that it will support reasonable funding requests. Woodside is currently assessing the funding proposal that KAC have put forward and will provide financial resourcing if a reasonable basis for quote is received, however notes that it was received 9 months after feedback was requested. Woodside considers KAC's request for funding was not a pre-requisite for consultation under regulation 11A to occur. Similarly, Woodside notes that retaining a legal advisor is not pre-requisite for consultation to occur.</p> <p>(3) Woodside has noted KAC's assertion of sea rights over their native title claim</p> <p>(4) Woodside has assessed the Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with KAC and address appropriate support for resourcing, separate from consultation under</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) &amp; (4) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environmental plans referenced as <b>PS 16.2.1</b> in this EP. This includes continued engagement through a proposed Framework Agreement which will be applied to ongoing consultation.</p> <p>(3) Woodside updated Section 4.9to record WAC's interests and potential cultural values and assessed potential impact on these, including controls, in section 6.10</p>

	<p>Reg 11A. Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members. Woodside will propose to develop the first draft of a Framework Agreement for KAC's consideration within the next 2 months.</p> <p>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 <b>Section 7.15</b>).</p>	
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**Ngarluma Aboriginal Corporation (NAC)**

NAC is established under the Native Title Act 1993 by the Ngarluma people to represent the Ngarluma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with NAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

- Sufficient Information:
  - Woodside Sought direction on NAC's preferred method of consultation. This resulted in a face-to-face meeting being coordinated at the location of NAC's choosing, with NAC nominated representatives. This meeting included Woodside presenting information in a format and style that was readily accessible and appropriate.
  - Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to NAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
  - Articulated planned and unplanned environmental risks and impacts, with proposed controls.
  - Set out in detail what was being sought through consultation.
  - Asked for the consultation and information sheets to be distributed to members and individuals.
  - Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan Provided response to questions asked about the activity through consultation. Through these questions, NAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
  - Advised that NAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))
- Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to NAC on 20 January 2023 based on their function, interest, and activities.
- Woodside commenced consultation with NAC in January 2023. Woodside has addressed and responded to NAC over 9 months, demonstrating a “reasonable period” of consultation.

Woodside asked NAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via a meeting and written exchanges to further understand the environment in which the activity will take place. NAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NAC’s functions, interests or activities.

#### **Summary of information provided and record of consultation:**

##### Summary of broader Scarborough Project engagement and Ethnographic Survey:

- On 1 May 2019, cultural authorities nominated by NAC attended an ethnographic survey in conjunction with other Ngarda Ngarli People (the Traditional Custodians of Murujuga, comprising the Ngarluma, Mardudhunera, Wong-Goo-Tt-Oo, Yaburara and Yindjibarndi people) and both male and female heritage consultants consistent with industry standard practice:
- While this survey was conducted nominally for the Scarborough project’s development footprint, a landscape-scale approach was undertaken particularly given the limited knowledge of the submerged landscape. This survey found no ethnographic values within the Operational Area or EMBA.
- Participants contributed to the findings and recommendations of Mott 2019 which included:
  - Onshore heritage sites were identified, beyond the Operational Area and EMBA of this EP.
  - No known sites or values were identified beyond the low water mark, but the potential for cultural values to exist was identified as requiring further research.
  - Recommendation to keep Traditional Custodians informed including through existing quarterly meetings (see below)
  - Recommendation to engage with researchers on options to identify submerged heritage.
  - Recommendation for cultural awareness training for contractors
  - Recommendations for the management of onshore heritage sites beyond the Operational Area and EMBA of this EP
- Following the recommendations of Mott 2019, Woodside conducted further work to identify submerged heritage values (refer to Section 4.9.1), kept NAC informed of the progress of the Scarborough project through quarterly meetings (see below), and where appropriate ensure employees and contractors have completed cultural awareness training through MAC.
- Woodside also took steps in consultation with NAC to appropriately manage onshore heritage sites beyond the Operational Area and EMBA of this EP.
- On 20 January 2023, Woodside emailed NAC advising of the proposed activity (Appendix F, reference 3.6) 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 5.43). Woodside noted it is seeking NAC's feedback as soon as possible on the proposed activity. Woodside made it 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 noting 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 if there has been any progress in terms of securing a preferred day and timeslot.
- On 9 March 2023, NAC emailed Woodside to advise that the contact at NAC was unavailable to meet on 30 March 2023.
- On 9 March 2023, Woodside emailed NAC:
  - Woodside advised that during a previous meeting, NAC had advised its next board meeting would be held on 29 and 30 March 2023 and that Woodside would potentially be 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 Environmental Plans and note if they have interests in the environment that may be affected (EMBA).
  - Woodside welcomed the suggestion of alternative days/times or ways that it can provide an overview to NAC the board.
- On 10 March 2023, NAC emailed Woodside to advise that its March Board Meeting was full with overflows from January and February and at this stage would 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 2023. NAC advised this needed to be confirmed with its Board before it could commit to a time or date.
- On 17 April, Woodside emailed NAC noting there had been no confirmation of an April meeting and seeking advice on whether NAC had feedback in relation to the proposed activities. The email explained Woodside's plan to submit the EP and 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 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 20 April 2023, NAC emailed Woodside noting that the next board meeting would be 26 April 2023 and asking if Woodside still would like to attend.
- On 20 April 2023, Woodside emailed NAC confirming that Woodside would appreciate time to present at the Board meeting.
- On 20 April 2023, NAC emailed Woodside requesting any documentation for the board meeting packs.
- On 21 April 2023, NAC advised that 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 2023, Woodside thanked NAC for their response.
- On 26 April 2023, Woodside emailed NAC with an information sheet on another activity and responded to some queries about spill response which generated from a phone discussion and NAC's email of 20 April 2023.
- On 28 April 2023, Woodside emailed NAC advising that the next step was for the EP to be submitted but no feedback had been received to date. The email stated that before Woodside submits, Woodside sought to understand whether there were any issues or concerns with the proposed activities that needed to be reflected in the EP.
- **(2)** On 10 May 2023, NAC replied to Woodside stating that they were supportive of submission of the EP and looked 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 2023.
- 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 the agenda and reasons for consultation.
  - Woodside introduced the regulations it needs to comply with and the role of NOPSEMA.
  - Woodside explained that many of its 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 it is 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 would be welcomed throughout the life of all Environment Plans
  - Woodside provided a high-level overview of the Scarborough project.
  - Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video to show the pipelay which was designed for public audience.
  - **(1)** NAC asked when these activities were proposed to happen, Woodside responded later this year pending government approvals.
  - Woodside described the Scarborough seabed intervention and trunkline installation activities including describing vessels involved, seabed preparation, pipelay and post lay activities.
  - NAC asked a question regarding Native Title which was addressed. The proposed trunkline route does not pass through Ngarluma Native Title area.
  - **(1)** NAC asked whether the pipe would be covered over, Woodside responded that in some areas it is laid in a trench and backfilled, and in other areas it may have rock covering. The majority is left uncovered.
  - 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 were any questions on the environmental risks and impacts, none were received.
  - Woodside noted that any questions or considerations could be directed through Woodside, or the Quarterly Heritage Meetings which NAC has a standing invite to, noting that those meeting were 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.
- On 18 July 2023, Woodside emailed NAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that NAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- On 26 July 2023, Woodside emailed NAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, Woodside emailed NAC regarding the acceptance of a different Scarborough EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether NAC was aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural



connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.

- On 9 August 2023, Woodside emailed NAC again seeking feedback and information relating to the accepted Scarborough EP, stating the conditions of acceptance:
  - if NAC were aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
  - if there was any information, they wished wish to provide on cultural features and/or heritage values.
  - the email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement.
  - the email also described the purpose of consultation.
- On 10 August 2023, NAC emailed Woodside to express limited capacity and notify an alternate contact who would be handling EP consultation.
- On 10 August 2023, Woodside emailed NAC apologising for the influx of emails and confirming contact details.
- On 11 August 2023, Woodside held a web meeting with NAC to discuss plans for consultation. NAC requested a list of EPs for which Woodside would seek input from NAC. NAC indicated that it would establish a Working Group which would hold bi-monthly engagements with Woodside. It also noted ongoing capacity issues.
- On 16 Aug 2023, Woodside emailed NAC seeking to re-establish a regular meeting cadence and proposing to commence in the following week.
- On 15 September 2023, Woodside emailed NAC acknowledging the previous email, advising of the planned start date for the activity, and once again requesting if NAC was aware of any other people with whom Woodside should consult, and if there was any information NAC wished to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023, but reiterated that Woodside would take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached (Appendix F, reference 5.57).
- **(3)** On 18 September 2023, NAC emailed Woodside proposing:
  - establishment of Joint Working Group.
  - Woodside to provide draft agreement.
  - Working group meeting commence in October with monthly meetings.
  - Noting arrangements would cover future scope of consultations with NAC.
  - On 28 September 2023, NAC representative emailed Woodside requesting a phone discussion about consultations with NAC.
- **(3)** On 28 September 2023, Woodside had a phone discussion with NAC representative, they were following up on Woodside consultation requests and wished to progress a consultation meeting with NAC Working Group in October. They requested Woodside:
  - Propose date/s to meet.
  - Confirm they would cover cost.
  - Provide any relevant information prior to the meeting.
  - Advise which Eps Woodside would like to consult with NAC on.
  - Woodside agreed to follow up on the above and looked forward to meeting with the Working Group in October.

- On 10 October 2023, Woodside emailed NAC in response to their email of 18 September 2023, in principle supporting NAC’s proposal for ongoing consultation through a Working Group. Woodside requested meeting dates and confirmed that Woodside would provide a first draft of the agreement.

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.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) During face-to-face engagements related to this activity and others, NAC asked:</p> <ul style="list-style-type: none"> <li>When the activities were proposed to commence.</li> <li>Whether the pipeline is covered over.</li> </ul> <p>(2) NAC emailed Woodside on 10 May 2023, supporting submission of this EP and looking forward to ongoing consultation.</p> <p>(3) NAC proposed establishing a Joint Working Group to engage in meetings with Woodside for ongoing consultation. NAC noted they have capacity issues and require resourcing to cover costs of meeting.</p>	<p>(1) Woodside responded to NAC requests for further information during face-to-face engagements, and no further information was requested on these topics.</p> <p>(2) NAC is supportive of this EP submission.</p> <p>(3) Separate from consultation under Reg 11A, Woodside will establish an agreement with NAC to work with the NAC Working Group. The agreement and Working Group would be used to frame ongoing consultation during the life of the EP. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (pictures, maps, video) and project attendance allowing opportunity to ask questions and seek further understanding.</p> <p>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 <b>Section 7.15</b>).</p>	<p>(1) Existing controls considered sufficient as described in Section 6.</p> <p>(2) Not required</p> <p>(3) Woodside is implementing a program to actively support Traditional Custodians’ capacity for ongoing engagement and consultation on environmental plans referenced as <b>PS 16.2.1</b> in this EP. This includes continued engagement through the proposed Framework Agreement which will be applied to ongoing consultation.</p>

**Murujuga Aboriginal Corporation (MAC)**

MAC is established under the Burrup and Maitland Industrial Estates Agreement and is the representative body for the Traditional Custodians for Murujuga being the Ngarluma, the Mardudhunera, the Yaburara, the Yindjibarndi, and the Wong-Goo-Tt-Oo peoples (collectively Ngarda-Ngarli). MAC is the cultural authority for Murujuga and is responsible for the management and protection of its cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with MAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

**Sufficient Information:**

- Woodside Sought direction on MAC's preferred method of consultation. This resulted in face-to-face meetings being coordinated at the location of MAC's choosing, with MAC nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to MAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what was being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan
- Provided response to questions asked about the activity through consultation. Through these questions, MAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
- Advised that MAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))

**Reasonable Period:**

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside first met with MAC to discuss the activity in August 2020
- Consultation information provided to MAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to MAC over three years, demonstrating a "reasonable period" of consultation.

Woodside asked MAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. MAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on MAC's functions, interests or activities.

## 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 several 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 1 May 2019, cultural authorities nominated by MAC attended an ethnographic survey in conjunction with other Ngarda Ngarli People (the traditional custodians of Murujuga, comprising the Ngarluma, Mardudhunera, Wong-Goo-Tt-Oo, Yaburara and Yindjibarndi people) and both male and female heritage consultants consistent with industry standard practice.
- While this survey was conducted nominally for the Scarborough project's development footprint, a landscape-scale approach was undertaken particularly given the limited knowledge of the submerged landscape. This survey found no ethnographic values within the Operational Area or EMBA.
- Participants contributed to the findings and recommendations of Mott 2019 (which is publicly available) which included:
  - Onshore heritage sites were identified, beyond the Operational Area or EMBA of this EP.
  - No known sites or values were identified beyond the low water mark, but the potential for cultural values to exist was identified as requiring further research.
  - Recommendation to keep Traditional Custodians informed of the project.
  - Recommendation to engage with researchers on options to identify submerged heritage.
  - Recommendation for cultural awareness training for contractors.
  - Recommendations for the management of onshore heritage sites beyond the Operational Area or EMBA of this EP.
- Following the recommendations of Mott 2019, Woodside conducted further work to identify submerged heritage values (refer to Section 4.9.1), kept MAC informed of the progress of the Scarborough project, and where appropriate ensured employees and contractors have completed cultural awareness training through MAC.
- On 10 September 2019, MAC issued a letter to Woodside with formal comment on Dredging and Spoil Disposal Management Plan (DSDMP) (Revision 0) and request for meeting.
- On 11 October 2019, Woodside provided written response to MAC's comments on the DSDMP raised in the 10 September 2019 letter, along with the copy of the revised DSDMP (Revision 1) incorporating changes made in response to these comments.
- On 15 October 2019, Woodside met with MAC and discussed comments raised on the DSDMP.
- On 6 November 2019, Woodside provided written response to MAC's comments on the DSDMP raised in a briefing note, along with the copy of the revised DSDMP (Revision 2) incorporating changes made in response to these comments.
- On 2 December 2019, MAC provided additional comments in response to the 6 November 2019 letter.
- On 6 December 2019, Woodside provided tabulated responses to MAC's comments raised after the 15 October 2019 meeting.
- On 7 January 2020, Woodside emailed MAC with a letter formally requesting a series of engagements to resolve outstanding concerns.
- On 10 January 2020, MAC emailed Woodside informing that MAC supports the proposed approach and is available to meet from mid-January 2020, requesting an agenda.
- On 14 January 2020, Woodside emailed MAC proposing that for the first meeting, agenda should be identifying key issues for both parties and agreeing way forward. Woodside informed MAC that beyond the first meeting, Woodside's aim is to finalise the DSDMP and CHMP in consultation with MAC and guided by MAC's concerns as outlined in previous correspondence.

- On 17 January 2020, MAC requested additional information from Woodside in the form of an 'information package'. Woodside delivered the component of this information package relate to the DSDMP.
- On 27 March 2020, MAC issued a report to Woodside with feedback across three issues including review and MAC response to updated DSDMP (Rev 2 – submitted to EPA.).
- On 10 July 2020, Woodside presented to MAC a proposed DSDMP engagement roadmap, update on the project, and discussed impact assessment approach for sediment related impacts including modelling and tiered monitoring and management framework.
- On 14 August 2020, Woodside issued MAC a detailed written response to comments on Rev 2 of the DSDMP received 27 March 2020.
- On 25 August 2020, Woodside CEO and MAC Board met in person at the MAC office on Murujuga about several 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 2 October 2020, Woodside email MAC to request advice on progressing a Scarborough ethnographic survey, to be completed by MAC with a final report provided to Woodside.
- On 5 October 2020, MAC called Woodside to discuss way forward with the proposed Scarborough ethnographic survey.
- On 6 October 2020, Woodside emailed MAC to confirm arrangements and request an updated quote.
- On 8 October 2020, Woodside finalised the requested scope of works for the 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 11 December 2020, Woodside provided a full-day presentation on Scarborough construction methodology, including seabed intervention techniques to MAC. MAC nominated their consultants to attend this meeting. No feedback was received on the proposed activity during presentation.
  - At the same meeting, discussed the seabed intervention and shore crossing works addressed in the DSDMP.
- On 2 February 2021, Woodside met with MAC and presented and discussed: seabed intervention and shore crossing scope; and revised sediment dispersal modelling.
- On 16 February 2021, Woodside met with MAC and presented and discussed: nearshore activities; benthic communities and habitat mapping; sediment dispersion modelling; ecological zones and coral compositions; modelling thresholds and outcomes; environment quality guidelines.
- On 25 February 2021, Woodside met with MAC and provided a fly-through of the trunkline corridor using GIS data and modelling layers. There was also a presentation and discussion about baseline water quality data and tiered monitoring and management framework.
- 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. MAC has not consented to Woodside sharing this report. It contained 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 23 July 2021, at a meeting, Woodside provided further information and discussion about seabed intervention scope and use of spoil grounds to be included in Revision 3 of the DSDMP.
- On 30 July 2021, at a meeting with MAC, Woodside provided further information and discussion about water quality monitoring sites – Woodside and MAC discussed the location and number of water quality sites for the monitoring program; protection of marine fauna; and how other matters raised by MAC will be addressed in DSDMP Revision 3.

#### Ensuring Sufficient Information and Reasonable Period

- On 31 August 2021, Woodside emailed MAC advising of the proposed activity (Appendix F, reference 1.17) and provided a Consultation Information Sheet.
- Woodside proposed an additional meeting with MAC in late November 2021 to discuss this EP. MAC was unable to facilitate a meeting within the requested timeframe.
- On 5 October 2021, at MAC’s request, Woodside provided a condensed presentation on seabed intervention techniques to MAC’s submerged heritage consultant. No feedback was received on proposed activity during presentation.
- On 11 November 2021 –MAC provided Woodside a presentation/position about intangible heritage values. This report included a summary of the cultural and spiritual values of the marine environment to be considered in the DSDMP.
- On 15 December 2021 -Woodside met with MAC Board and Circle of Elders to provide a project overview.
- **(3)** On 9 January 2022 Woodside sent a letter to MAC clarifying roles, composition, funding and milestones around the Heritage Management Committee.
- **(1 & 2)** 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.
- Woodside met with MAC representatives on 10 February 2022:
  - The history of Woodside and MAC engagement regarding Scarborough project and the proposed activity was discussed.
  - Woodside presented a pack summarising the project and the proposed activity.
  - Detailed information regarding seabed intervention and pipeline construction was provided.
  - A summary of cultural heritage management was provided, including potential impacts and proposed controls.
  - It was agreed that Woodside would provide proposed EP wording to MAC.
  - On 10 February 2022, Woodside met with MAC to discuss Scarborough trunkline construction activities and the links to associated approvals including the State, and Commonwealth Environment Plans and the DSDMP and CHMP.
  - A presentation pack prepared for the MAC Circle of Elders detailing Scarborough Project trunkline construction activities and associated environmental and cultural heritage management measures was reviewed.
  - Several actions were agreed to assist in finalising the Environment Plans, DSDMP and associated CoE presentation pack.
- 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.

- Woodside met with MAC representatives on 25 March 2022:
  - Opportunities for MAC commercial participation in the activity were discussed, including for MAC Marine Fauna Observers
  - Further discussion of activities outside the scope of the EP was held.
- On 30 March 2022, Woodside emailed MAC to confirm MAC's three areas of concern regarding the activities of this EP in Commonwealth waters, as follows:
  - Indirect impacts as a result of the broader Scarborough Project (i.e., potential impacts to Murujuga from onshore emissions associated with processing Scarborough gas).
  - Uncertainty over the results of further ethnographic surveys
  - Cultural heritage management approach of the project, particularly regarding submerged heritage
- On 1 April 2022, MAC emailed Woodside thanking for the email on 30 March 2022 and committing to responding in the next week.
- On 6 April 2022, Woodside emailed MAC requesting a response so that it could begin actioning.
- On 6 April 2022, MAC sent an email confirming that this reflected the three major outstanding issues at a high level, but requesting greater clarity on how this EP would be updated to reflect MAC's concerns. The email also queried whether Woodside had contracted an underwater archaeologist and proposed an action list for the Senior Corporate Affairs Adviser - Heritage.
- On 6 April 2022, Woodside emailed MAC to propose that the following wording be incorporated into this EP and asked for confirmation that these points captured the matters of concern to MAC.
  - The purpose of the Petroleum Activities program is to install the Scarborough trunkline over a route of about 400km, in Commonwealth waters. The Scarborough SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. 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 future Scarborough EPs as appropriate.
  - The completed ethnographic surveys, which align with industry practice, have not identified any heritage risks. Woodside remains committed to the further ethnographic surveys planned for the Scarborough project which go beyond industry standards and is ready to progress these at MAC's earliest availability. The results of these surveys will be addressed through the Heritage Management Committee proposed below.
  - Woodside has accepted MAC's recommendation to supplement existing heritage works completed with a review of Side Scan Sonar data for the outer shelf area by an underwater archaeologist, expert advice on further works and the development of significance, impact, and mitigation assessments. New information arising from this work after relevant approvals are received will be presented to a Heritage Management Committee with representatives from MAC, Woodside, and relevant experts to formulate recommendations to the project.
- On 8 April 2022, Woodside called and emailed MAC to enquire whether MAC had any feedback on the proposed Environment Plan amendments.
- On 8 April 2022, MAC emailed stating that their position is that all feedback provided during the consultation process to date is expected to be incorporated.
- 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.
- On 29 April 2022, Woodside emailed MAC a copy of updates made to the EP as a result of recent consultation, including new Environmental Performance Outcomes, Standards and Measurement Criteria, and suggesting that additional feedback be directed to NOPSEMA.
- MAC wrote a letter to NOPSEMA, dated 9 May 2022, reiterating their concern that the EP does not account for indirect impacts as a result of the broader Scarborough Project (e.g., potential impacts to Murujuga from onshore emissions associated with processing Scarborough gas). NOPSEMA provided this letter to Woodside on 30 May 2022.
- In a follow up to the 27 April 2022 meeting, on 11 May 2022, Woodside provided a letter to MAC requesting advice as to whether the Phase II survey was still supported by MAC.

- **(3)** 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 31 August 2021, Woodside sent an email to MAC advising of plans to submit this EP, that Consultation regarding this matter forms part of the consultation between Woodside and MAC agreed in the 2 June 2021 letter, and seeking feedback.
- **(2)** On 20 September 2022 Woodside sent an email to MAC seeking permission to share ethnographic survey results with NOPSEMA.
- 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 of 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,
  - Developments in regard 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 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 17 November 2022, Woodside provided a letter to MAC regarding the selection of the trunkline route.
- On 17 January 2023, at MAC's request Woodside re-provided a copy of Nutley 2022 to MAC along with Woodside's proposed responses to the results.
- **(3)** 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 again formally 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 (Appendix F reference 3.5). 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.
- **(5)** 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
  - 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.
- **(2)** 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 5.47). 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 several 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.
- **(1)** On 22 June 2023, Woodside met with the MAC Board and Circle of Elders:
  - 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 MAC to raise anything which they felt was 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.
  - Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline installation and Subsea infrastructure installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of the video to show the pipelay which was designed for public audience.
  - **(4)** MAC asked whether the installed infrastructure would be moved in a cyclone. Woodside confirmed that the infrastructure will be permanently moored in place.

- Woodside described planned and unplanned environmental risks and impacts in accordance with tables provided in the information sheets for the activity 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 knowing that they are all diesel fuel releases which would only be caused by vessel collisions.
- On 18 July 2023, Woodside emailed MAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that MAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.
- **(6)** On 21 July 2023, MAC emailed a letter to Woodside. The letter confirmed that MAC have no concerns at this time with regards to the SITI EP. MAC confirmed their desire for ongoing engagement and appreciated Woodside's commitment to this.
- On 26 July 2023, Woodside emailed MAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, Woodside emailed MAC regarding the acceptance of a different Scarborough EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether MAC is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 7 August 2023, Woodside emailed MAC with the weekly update on this activity.
- On 9 August 2023, Woodside emailed MAC again seeking feedback and information relating to an accepted Scarborough EP, stating the conditions of acceptance:
  - if they were aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
  - if there was any information you wish to provide on cultural features and/or heritage values
  - the email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement.
  - the email also described the purpose of consultation.
- On 14 August 2023, Woodside emailed MAC with the weekly update on this activity.
- On 21 August 2023, Woodside emailed MAC with the weekly update on this activity.
- On 21 August 2023, Woodside emailed MAC seeking MAC's cultural clarifications about information in relation to Songlines, Elder status and whether cultural information about Murujuga can be held by individuals and not known to others.
- On 28 August 2023, Woodside emailed MAC with the weekly update on this activity.
- On 1 September 2023, MAC emailed a letter to Woodside noting the following:
  - In response to Woodside's email of 21 August, MAC consulted with women appointed to their Circle of Elders
  - MAC is comfortable that the women in the Circle of Elders are the right people to be consulted about these matters.
  - MAC notes that it would be extremely unusual for knowledge to be held by an individual without surrounding groups knowing about it.
  - The Circle of elders themselves represent the Ngarda-Ngarli; the collective term for the Traditional Custodians who look after Murujuga Country.
- On 11 September 2023, Woodside emailed MAC with the weekly update on this activity.
- On 15 September 2023, Woodside emailed MAC advising of the planned start date for the activity, and once again requesting if MAC is aware of any other people with whom Woodside should consult, if there is any information MAC wish to provide on cultural features and/or heritage values. The email requested that

information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023, but reiterated that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached. No response was received to this email.

- On 19 September 2023, Woodside emailed MAC with the weekly update on this activity.
- On 4 October 2023, Woodside phoned MAC to discuss the cultural appropriateness of a proposed visit to Rosemary Island, requested by a self-identifying Traditional Custodian. Woodside was advised not to undertake the trip due to cultural safety concerns.
- On 4 October 2023, MAC emailed Woodside thanking them for the call and informing Woodside that it is MAC’s expectation that Woodside continues to request advice regarding cultural safety prior to such trips being undertaken.
- On 4 October 2023, Woodside emailed MAC thanking them for their advice, confirming the trip had been cancelled and that Woodside would continue to seek MAC’s advice on similar matters in future.

Ongoing Relationship Building

Woodside will continue to pursue an ongoing two-way relationship with MAC focused on future opportunities to work together.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) MAC have provided significant valuable input into the management of known and potential cultural and heritage values in the broader Scarborough Project footprint. During face-to-face engagements related to this activity and others, MAC requested further information on topics related to this proposed activity which were responded to in correspondence and during the meetings:</p> <p>This EP does not account for indirect impacts as a result of the broader Scarborough Project (e.g., potential impacts to Murujuga from onshore emissions associated with processing Scarborough gas).</p>	<p>(1) Woodside responded to MAC’s request for further information during face-to-face engagement, and in writing, no further information was requested on these topics.</p> <p>The EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. 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 future Scarborough EPs as appropriate.</p> <p>(2) The completed ethnographic surveys, which align with industry practice, have not identified any heritage risks. Woodside remains committed to the further ethnographic surveys planned for the Scarborough project which go beyond industry standards and is ready to progress these at MAC’s earliest availability. The results of these surveys will be addressed through the Heritage Management Committee.</p>	<p>(1) Existing controls considered sufficient as described in Section 6. Woodside recognises that whales and other species of totemic importance need to be protected, including their populations and migration patterns (<b>Section 4.9</b>). As assessed in <b>Section 6</b>, 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.</p> <p>(2) &amp; (3) Woodside and MAC have established the Heritage Management Committee (PS 16.7.1). 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 (PS 16.8.2). New heritage information, where applicable to this proposed activity, will be addressed as part of ongoing consultation (<b>Table 7.15</b>).</p> <p>(4) Not required                      (5) (5) Not required.                      (6) Not required</p>

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<p>(2) Uncertainty over the results of further ethnographic surveys, as new heritage values identified may require further mitigations.</p> <p>(3) MAC's input has helped shape the structure and operation of the HMC described in 7.5 including their advice:</p> <ul style="list-style-type: none"> <li>a. That recommendations of the HMC need not be unanimous,</li> <li>b. That the HMC include MAC staff in addition to MAC Board, executive and Circle of Elders, and</li> <li>c. That developments in regard to the World Heritage listing of the Murujuga Cultural Landscape does not trigger any meeting of the HMC.</li> </ul> <p>(4) Queried whether the installed infrastructure would be moved in a cyclone.</p> <p>(5) MAC directed that consultation be undertaken with both the board and the Circle of Elders, which was implemented.</p> <p>(6) On 21 July 2023, MAC sent a letter to Woodside acknowledging the consultation on 22<sup>nd</sup> June and stating they had no concerns with this EP at this time.</p>	<p>(3) Woodside has agreed to the matters advised by MAC regarding the HMC with regards to the requirement for unanimous recommendations, membership of the HMC and the appropriate triggers for HMC meetings.</p> <p>(4) Responded within the meeting.</p> <p>(5) Woodside continues to engage with MAC on the Scarborough project generally and has committed to ongoing consultation (post regulation 11A consultation) with MAC Board and Elders.</p> <p>(6) MAC is supportive of this EP submission.</p> <p>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 <b>Section 7.15</b>).</p>	
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**Wirrawandi Aboriginal Corporation (WAC)**

WAC is established under the Native Title Act 1993 by the Mardudhunera and Yaburara people to represent the Mardudhunera and Yaburara people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with WAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

- Sufficient Information:
  - Woodside Sought direction on WAC's preferred method of consultation. This resulted in two face-to-face meetings being coordinated at the location of WAC's choosing, with WAC nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate. Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to WAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Set out in detail what was being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan Provided response to questions asked about the activity through consultation. Through these questions, WAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
- Advised that WAC could request the particular information provided in the consultation not be published (to align with 11A(2)(4))

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to WAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to WAC over 9 months, demonstrating a "reasonable period" of consultation.

Woodside asked WAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. WAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on WAC's functions, interests or activities.

### Summary of information provided and record of consultation:

#### Historical Relationship

- On 1 May 2019, cultural authorities nominated by WAC attended an ethnographic survey in conjunction with other Ngarla Ngarli People (the traditional custodians of Murujuga, comprising the Ngarluma, Mardudhunera, Wong-Goo-Tt-Oo, Yaburara and Yindjibarndi people) and both male and female heritage consultants consistent with industry standard practice:
  - While this survey was conducted nominally for the Scarborough project's development footprint, a landscape-scale approach was undertaken particularly given the limited knowledge of the submerged landscape. This survey found no ethnographic values within the Operational Area or EMBA.
  - Participants contributed to the findings and recommendations of Mott 2019 which included:
  - Onshore heritage sites were identified, beyond the Operational Area and EMBA of this EP.
  - No known sites or values were identified beyond the low water mark, but the potential for cultural values to exist was identified as requiring further research.
  - Recommendation to keep Traditional Custodians informed including through existing quarterly meetings (see below).
  - Recommendation to engage with researchers on options to identify submerged heritage.
  - Recommendation for cultural awareness training for contractors.
  - Recommendations for the management of onshore heritage sites beyond the Operational Area and EMBA of this EP.
  - Following the recommendations of Mott 2019, Woodside conducted further work to identify submerged heritage values (refer to Section 4.9.1), kept WAC informed of the progress of the Scarborough project through quarterly meetings (see below), and where appropriate ensured employees and contractors had completed cultural awareness training through MAC.
  - Woodside also took steps in consultation with WAC to appropriately manage onshore heritage sites beyond the Operational Area and EMBA of this EP.

#### Ensuring Sufficient Information and Reasonable Period

- On 20 January 2023, Woodside emailed WAC advising of the proposed activity (Appendix F, reference 3.8) 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 and information sought.
  - 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 several Woodside activities and EMBA's including this proposed activity.
  - Woodside requested it would like to gain an understanding on the best way to progress if WAC Board wished to have further discussions in relation to this information and also on how they preferred Woodside to engage for any future information shares.
- On 21 February 2023, Woodside spoke with WAC to discuss the proposed activity and plan a consultation meeting.
- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity following on from the 21 February 2023 meeting (Appendix F, reference 5.44). 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 that a meeting had been proposed for the Elders and Directors in March 2023, but that the meeting was 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, WAC agreed by phone to meet with Woodside and a full meeting of the Board and Elders on 23 March 2023 in Perth
- 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 had 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 was to present to WAC Directors and Elders on information which 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.
- **(1 & 2)** 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.
  - Encouraged WAC to raise anything which they felt was missing in the information provided during the meeting, or any issues or concerns
  - Displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
  - Provided an overview of the broader Scarborough Project and overview of activities.
  - Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video to show the pipelay which was designed for public audience.
  - Described the proposed activity, noting trunkline location, size, depth, and length.
  - Described the types of vessels involved.
  - Described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
  - Displayed and spoke to the EMBA for each proposed Scarborough activity, 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.
  - Stated that Woodside wanted to understand how the functions, activities or interests of WAC and the people it represents may be impacted by any of those activities.
  - Specifically asked the following:
    - How could these activities impact your cultural values, interests, and activities - does protecting the environment do enough to protect your cultural values?
    - What are your concerns about the proposed activities and what do you think we should do about them?

- Is there anything you would like included in the EPs before submission?
  - Is there anyone else Woodside should consult with about the activities?
- Advised that Woodside will continue to take feedback from WAC for the life of the EP.
- Provided personal contact details for further feedback. Woodside provided NOPSEMA contact details, should WAC desire to provide feedback directly to the regulator.
- At the 23 March meeting:
  - **(1)** WAC asked for clarification that the proposed trunkline will be placed adjacent to the existing Pluto trunkline and bring gas to the Pluto gas plant, Woodside confirmed this.
  - **(1)** WAC asked what kinds of incidents could occur during the proposed activity, Woodside responded that major incidents could be a diesel spill.
  - **(1)** WAC asked where underwater heritage has been found, Woodside referred to a map to show where the known sites are relative to the trunkline route.
  - **(1)** 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.
  - **(1)** WAC asked whether activities cease during whale migration, Woodside responded they don't stop but use controls like pausing if there is whale activity within the area.
  - WAC asked about potential noise impact on whale communication. Woodside responded that controls have been put in place to try to avoid it.
  - **(1)** WAC asked whether a diesel spill would only be on the surface, Woodside responded that there will be a slick, but the diesel would go into the water column.
  - **(1)** WAC asked how long diesel stays in the environment, Woodside responded that the majority disappear within two days.
  - **(1)** WAC asked how quickly the response to a spill is, Woodside responded that they would already be on location.
  - **(1)** WAC asked whether the turtle monitoring program is still in place, Woodside responded that it is.
  - Woodside noted this concluded the Scarborough section of the meeting 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 several open community sessions available in the region where it could be discussed [referring to ongoing quarterly heritage update meetings to which WAC are invited].
  - WAC indicated that since they are engaging with several energy industry operators, they would consider the information provided and discuss internally before any further response.
  - Woodside provided 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 (see March 31, 2023, meeting in Robe River Kuruma relevant person table entry) (Appendix F, reference 5.54).
- On 3 May 2023, Woodside emailed a letter to WAC regarding the meeting with WAC Directors and Elders on 23 March (Appendix F, reference 5.53):
  - 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, none of which were 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 18 July 2023, Woodside emailed WAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that WAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.



- On 26 July 2023, Woodside emailed WAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, Woodside emailed WAC regarding the acceptance of a different Scarborough EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether WAC is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 3 August 2023, WAC emailed Woodside requesting a map of relevant Commonwealth and State EMBA's.
- On 9 August 2023, Woodside emailed WAC again seeking feedback and information relating to the accepted Scarborough EP, stating the conditions of acceptance:
  - If they were aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that had not yet been afforded the opportunity to provide information that may inform the management of the activity; and
  - If there was any information they wished to provide on cultural features and/or heritage values.The email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement. The email described the purpose of consultation.
- On 10 August 2023, Woodside emailed WAC providing a list (as requested by WAC) of current and pending EP's.
- On 10 August 2023, WAC emailed Woodside with thanks for the information and with a general query about EMBA's.
- On 15 August 2023, Woodside emailed WAC providing an explanation of the query in relation to EMBA's and EMBA development.
- On 15 August 2023, WAC emailed Woodside with thanks for the clarification and noting they would provide a formal response shortly.
- **(3)** On 31 August 2023, WAC emailed a letter to Woodside proposing a framework agreement to provide a streamlined, formalised approach to consultation between WAC and Woodside.
- On 11 September 2023, WAC emailed Woodside with a copy of the letter of 31 August, and advising that WAC does not object to Woodside progressing environment plans for the activities outlined on the proviso that Woodside and WAC enter into a framework agreement to provide for ongoing meaningful consultation with WAC and YM members in relation to activities the subject of EPs, as outlined in the attached letter on terms suitable to both parties within a reasonable period (nominally within the next 2-3 months).
- **(3)** On 12 September 2023, Woodside emailed WAC confirming receipt of the email of 11 September.
- On 18 September 2023, Woodside emailed WAC acknowledging the previous email, advising of the planned start date for the activity, and once again requesting if WAC is aware of any other people with whom Woodside should consult, and if there is any information WAC wish to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023, but reiterated that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached (Appendix F, reference 5.58). No response was received to this email.

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.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) During face-to-face engagements related to this activity and others, the WAC requested further information on topics related to this proposed activity which was responded to during the meeting:</p> <ul style="list-style-type: none"> <li>• Emergency preparedness</li> <li>• The relevance of the EMBA to consultation</li> <li>• Whether activities stop during whale migration.</li> <li>• Potential impact of noise on whale communication.</li> <li>• Whether a diesel spill would only be on the surface.</li> <li>• How long diesel stays in the environment.</li> <li>• What happens if something is dropped into the ocean.</li> <li>• How soon is a spill responded to.</li> <li>• Whether the turtle monitoring program is still in place.</li> <li>• How the EMBA influences consultation.</li> </ul> <p>(2) WAC expressed a general interest in whales and turtles. Woodside discussed controls protecting whales from an ecological perspective during meetings in which they were raised, no further feedback or comment was received on these topics.</p>	<p>(1) Woodside responded to WAC's requests for further information during face-to-face engagements, and no further information was requested on these topics.</p> <p>(2) Woodside noted WAC's interest in whales and turtles</p> <p>(3) Separate from consultation under Reg 11A, Woodside will establish a framework agreement with WAC. The agreement would be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (pictures, maps, video) and project attendance allowing opportunity to ask questions and seek further understanding.</p> <p>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 7.15).</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside updated Section 4.9 to record WAC's interests and potential cultural values and assessed potential impact on these, including controls, in section 6.10.</p> <p>(3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans referenced as <b>PS 16.2.1</b> in this EP. This includes continued engagement regarding WAC's proposed Framework Agreement which will be applied to ongoing consultation. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix L.</p>

<p>(3) WAC expressed that it does not object to Woodside progressing Scarborough Project EPs (including this activity) on the proviso that Woodside and WAC enter into a framework agreement to provide for ongoing meaningful consultation a desire for ongoing engagement and partnership through a Framework Agreement.</p>		
<p><b>Yinggarda Aboriginal Corporation (YAC)</b>                  YAC is established under the Native Title Act 1993 by the Yinggarda people to represent the Yinggarda people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.</p>		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with YAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p> <p>Sufficient Information:</p> <ul style="list-style-type: none"> <li>• Woodside Sought direction on YAC's preferred method of consultation. This resulted in face-to-face meetings being coordinated at the location of YAC's choosing, with YAC nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate.</li> <li>• Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to YAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format</li> <li>• Articulated planned and unplanned environmental risks and impacts, with proposed controls.</li> <li>• Set out in detail what was being sought through consultation.</li> <li>• Asked for the consultation and information sheets to be distributed to members and individuals.</li> <li>- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan Provided response to questions asked about the activity through consultation. Through these questions, YAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.</li> <li>• Advised that YAC could request the particular information provided in the consultation not be published (to align with 11A(2)(4))</li> </ul> <p>Reasonable Period:</p> <ul style="list-style-type: none"> <li>• Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to YAC on 20 January 2023 based on their function, interest, and activities.</li> </ul>		

- Woodside has addressed and responded to YAC over 9 months, demonstrating a “reasonable period” of consultation.

Woodside asked YAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since February 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. YAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on YAC’s functions, interests or activities.

**Summary of information provided and record of consultation:**

YMAC is the Native Title Representative Body (NTRB) for the Yamatji and Pilbara region which includes YAC. NTRBs exist to provide assistance to native title claimants and holders in regard 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.
  - YMAC directed Woodside that consultation related to Scarborough Project would be best directed to Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation
  - YMAC did not direct Woodside to engage with YAC, however YAC was identified as a relevant person under methodology outlined in Section 5 and YMAC is listed as YAC’s preferred contact on the ORIC website and is therefore Woodside’s primary contact when engaging YAC.
- 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. YAC was identified through Woodside’s own methodology.
- On 10 January 2023, Woodside emailed YAC/YMAC requesting to consult with YAC about work being planned for the Scarborough project, including a link to the NOPSEMA guidelines and advising that woodside would be sending further information on the project.
- On 20 January 2023, Woodside emailed YAC via the representative body Yamatji Marlpa Aboriginal Corporation (YMAC) advising of the proposed activity (Appendix F, reference 3.1) 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 be consulted and to engage, and request that YAC provide information to members as required.
- On 22 January 2023, YAC/YMAC emailed Woodside to advise it will contact Woodside once the consultation material had been reviewed.

- On 6 February 2023, Woodside called YAC/YMAC to follow up. YAC/YMAC said they would send an email that day inviting Woodside to meet with the group.
- On 22 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity and information sought. 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 Board.
- On 17 March 2023, Woodside met with YAC's legal representatives to discuss consultation on the Scarborough Project, preferred method and locality of consultation meetings, and to note that they will assist groups with funding to hold meetings on an agreed basis.
- 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 offered 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 emailed YAC via YMAC to confirm a preference for a face-to-face meeting and request a budget proposal.
- On 24 March 2023, the YMAC lawyer emailed to arrange a pre-meet conversation on 30 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 18 April 2023, Woodside emailed YMAC/YAC following up with information offered at the meeting of 13 March 2023; management of emissions, organisations that may provide independent expertise and re-iterating they would like to meet with YAC.
- On 27 April 2023, Woodside emailed the YMAC lawyer to confirm timing and location for the face-to-face meeting on 3 May 2023, 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 longer represented Yinggarda Aboriginal Corporation and that the meeting on 3 May 2023 had been cancelled. They informed Woodside that Gumula Aboriginal Corporation is now representing YAC and YMAC is in the process of hand over, including correspondence with Woodside.
- On 27 April, Woodside acknowledged YMAC email re Gumula Aboriginal Corporation transition to new service provider.
- On 28 April 2023, Woodside attempted to call Gumula Aboriginal Corporation and left a voicemail to establish connection, no response was received.
- 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 were interested, no response was received.
- On 8 May, Woodside phoned Gumula Aboriginal Corporation to follow up the email, explaining that it was seeking to consult Yinggarda on the proposed activity and noted that a planned 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.

- On 1 June 2023, Woodside emailed and phoned Gumala Aboriginal Corporation to speak with someone about consulting YAC on EPs. Reception said they would have a member of the governance team call back.
  - On 15 June 2023, Gumala Aboriginal Corporation emailed woodside proposing attendance at a YAC Board meeting on 6 July for one hour to discuss EPs.
  - On 19 June 2023, Woodside emailed Gumala Aboriginal Corporation accepting the invitation to attend the Board meeting, requesting a half day meeting with the board to allow YAC to ask questions and have time to consider information.
  - On 21 June 2023, Gumala Aboriginal Corporation emailed Woodside inviting attendance at a half day Board meeting to discuss other EP matters.
  - On 21 June 2023, Woodside emailed Gumala Aboriginal Corporation accepting the invite to attend the Board meeting of 5 July 2023 for a half day.
  - **(1)** On 5 July 2023, Woodside presented to the YAC about several EPs including this EP. At the meeting Woodside:
    - Described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
    - Displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
    - Provided an overview of the broader Scarborough Project and overview of activities.
    - Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video to show the pipelay which was designed for public audience.
    - Described the proposed activity, noting trunkline location, size, depth, and length.
    - Described the types of vessels involved.
    - Described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
    - Displayed and spoke to the EMBA for each proposed Scarborough activity, 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.
    - Stated that Woodside wanted to understand how the functions, activities or interests of YAC and the people it represents may be impacted by any of those activities.
    - Specifically asked the following:
      - How could these activities impact your cultural values, interests, and activities – does protecting the environment do enough to protect your cultural values?
      - What are your concerns about the proposed activities and what do you think we should do about them?
      - Is there anything you would like included in the EPs before submission?
      - Is there anyone else Woodside should consult with about the activities?
- Advised that Woodside will continue to take feedback from YAC for the life of the EP.
- Provided personal contact details for further feedback. Woodside provided NOPSEMA contact details, should YAC desire to provide feedback directly to the regulator.
- **(1)** At the 5 July meeting YAC made particular mention of the following:

- **(1)** YAC expressed sadness at the potential for environmental impact.
  - Response: Woodside explained that the potential impact from the unplanned activities is very low. For example, Woodside has been operating in the region for over 30 years and has not had a serious unplanned environmental event in that time. Importantly, if there is an unplanned event, the entire EMBA as shown on the maps will not be impacted. The area of the EMBA will be somewhere within the mapped area depending on factors such as wind, current and tide.
  - **(1,2)** YAC stated plants, animals and the environment are inexorably linked to their culture and asked: whether Woodside has undertaken environmental studies and whether these studies ongoing; and
  - what environmental monitoring happens after the EPs are approved.
  - Response: Woodside has undertaken numerous environmental studies that form part of the EPs and has an ongoing commitment to environmental studies and research, some of which are set out on Woodside's website.
  - Environmental monitoring is an ongoing activity, and the nature and timing of environmental monitoring depends on the nature, possible consequences, and likelihood of the environmental risks. Importantly, Woodside commits to ongoing consultation with YAC and will be able to take feedback if any new information in relation to risks comes to light.
  - **(1)** YAC suggested that ranger programs could assist with environmental management and monitoring, and that YAC would likely write to Woodside about this suggestion and generally to discuss how YAC can be involved with / benefit from Woodside's activities.
  - Response: Woodside looks forward to discussing these opportunities with YAC further as part of our ongoing engagement. Woodside commits to ongoing consultation about the EPs and to building the relationship with YAC.
  - **(2)** YAC expressed concern about potential impacts to potential impact patterns of whales, and potential collisions. Woodside responded by explaining controls which would be in place to minimise impacts and risks to whales, and no further information was requested.
  - **(2)** YAC expressed that seagrass, mullet and Dugong in Shark Bay are important resources. Woodside explained that the only potential impact to Shark Bay is via a highly unlikely hydrocarbon spill and the controls in place
- On 17 July, Woodside emailed YAC a letter summarising the 5 July meeting.
  - On 19 July 2023, Woodside emailed YAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that YAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.
  - On 19 July 2023, YAC emailed Woodside acknowledging receipt of Woodside's email of 19 July.
  - On 26 July 2023, Woodside emailed YAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
  - On 2 August 2023, YAC lawyer emailed Woodside to indicate that they had been placed on a retainer by YAC to advise on NOPSEMA matters.
  - On 3 August 2023, Woodside emailed YAC regarding the acceptance of a different Scarborough EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether YAC is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
  - On 4 August, YAC emailed Woodside noting that:
    - YAC was willing to formally engage with Woodside on future NOPSEMA consultation.
    - **(3)** Woodside was invited to submit a consultation agreement for YAC's consideration and invited to lay out desired content within the agreement.
    - Resourcing was required by Woodside to facilitate the consultation.
  - On 9 August 2023, Woodside emailed YAC again seeking feedback and information relating to the accepted Scarborough EP, stating the conditions of acceptance:

- if YAC was aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- if there is any information YAC wish to provide on cultural features and/or heritage values
- The email noted the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement. The email described the purpose of consultation.
- On 10 August 2023, YAC emailed Woodside, noting that:
  - Woodside had provided a considerable volume of videos, complex materials, and presentations to the YAC board since 1 July 2023, covering multiple proposed activities. The YAC board is seeking advice about different documents and considering cultural and spiritual impacts of proposed activities.
  - The YAC board had not yet concluded its investigations and provide feedback, and if Woodside has advanced plans with NOPSEMA it has different view of the role and capacity of TOs in the process as clarified by Santos v Tipakalippa.
  - Requesting appropriate resources and time for YAC board to allow them to form a considered view, as requested on 4 August.
  - YAC board intends to raise matters at a community meeting in Carnarvon in September, including Aboriginal community members who are not YAC members.
- On 11 August 2023, YAC emailed Woodside confirming formal resolution by the Board to retain their lawyer (Banks-Smith & Assoc (BSA)) to engage on NOPSEMA matters, providing a copy of the Board Resolution.
- On 11 August 2023, Woodside emailed YAC via their lawyer acknowledging the request for a draft consultation agreement, noting it would be attended to within a week or so and confirming the process for onboarding to receive payments.
- On 14 August 2023, YAC via their lawyer emailed Woodside stating that it looked forward to receiving the consultation agreement for consideration and agreeing arrangements for provision of resourcing.
- **(3)** On 13 September 2023, YAC via BSA responded to Woodside advising that in the absence of a draft consultation agreement they were unable to respond in substance to the matters raised.
- On 14 September 2023, Woodside emailed YAC via BSA advising of the planned start date for the activity, and once again requesting if YAC was aware of any other people with whom Woodside should consult, and if there was any information YAC wish to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023, but reiterated that Woodside would take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was and reiterating that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached (Appendix F, reference 5.59). No response was received to this email.
- **(3)** On 14 September 2023, Woodside emailed YAC via BSA with a proposed consultation framework.
- **(3)** On 14 September 2023, YAC via BSA confirmed receipt of the consultation framework and advised they would seek direction from the YAC board.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
(1) During face-to-face engagements related to this activity and others YAC requested further information on topics related to	(1) Woodside responded to YAC's requests for further information during face-to-face engagements, and no further information was requested on these topics.	(1) Existing controls considered sufficient, as described in Section 6.



<p>this proposed activity which was responded to during the meeting:</p> <ul style="list-style-type: none"> <li>- Whether Woodside has undertaken environmental studies and whether these studies are ongoing.</li> </ul> <p>YAC also expressed the following:</p> <ul style="list-style-type: none"> <li>- Sadness at the potential for environmental impact</li> <li>- Ranger programs could assist with environmental management and monitoring.</li> <li>- Expressed concern about potential impacts to potential impact patterns of whales, and potential collisions.</li> </ul> <p>(2) YAC expressed a general interest in whales, and generally plants, animals and the environment. Woodside discussed controls protecting these aspects from an ecological perspective during meetings in which they were raised, no further feedback or comment was received on these topics</p> <p>(3) YAC desires a consultation agreement with Woodside, and stated that they are unable to respond substantially. Woodside has provided a draft Consultation Framework Agreement which includes suggested timeframes to settle the agreement and timeframes for ongoing consultation with the Board.</p>	<p>(2) Woodside noted YAC's interest in whales, and seagrass, dugongs and mullet in Shark Bay. Environmental sensitivities that YAC 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</p> <p>(3) Separate from consultation under Reg 11A, Woodside will establish a framework agreement with YAC. The agreement would be used to frame ongoing consultation. Woodside does not consider YAC's request for a consultation agreement as a pre-requisite for consultation under regulation 11A. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, a face-to-face meeting with appropriate material (pictures, maps, video) and project attendance allowing opportunity to ask questions and seek further understanding. YAC has already provided information on their interests, which Woodside has noted (see 2). Woodside has also provided a reasonable period and opportunity for consultation (9 months).</p> <p>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 7.15).</p>	<p>(2) Woodside updated Section 4.9 to record YAC's interests and potential cultural values and assessed potential impact on these, including controls, in section 6.10.</p> <p>(3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans, referenced as <b>PS 16.2.1</b> in this EP. This includes the proposed Framework Agreement which will be applied to ongoing consultation. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix L.</p>
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**Yindjibarndi Aboriginal Corporation**

YAC is established under the Native Title Act 1993 by the Yindjibarndi people to represent the Yindjibarndi people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Yindjibarndi for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

• Sufficient Information:

- Provided Consultation Information Sheet and Consultation Summary Sheets to developed by Indigenous staff Yindjibarndi. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Confirmed the purpose of consultation and set out in detail what was being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Yindjibarndi on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to Yindjibarndi over 9 months, demonstrating a “reasonable period” of consultation.

Woodside asked YAC it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Yindjibarndi functions, interests, or activities.

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

**Summary of information provided and record of consultation:**

- On 20 January 2023, Woodside emailed Yindjibarndi advising of the proposed activity (Appendix F, reference 3.4) 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 5.45) and information sought.

<ul style="list-style-type: none"> <li>• <b>(1) &amp; (2)</b> On 26 February 2023, Yindjibarndi emailed Woodside. Yindjibarndi advised that it will not be providing any comment on the proposed activity broader Scarborough Project 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.</li> <li>• On 28 February 2023, Woodside emailed Yindjibarndi to thank them and noted the response.</li> <li>• On 7 July 2023, Woodside called Yindjibarndi who reiterated that it would prefer that comments come from coastal Aboriginal Corporations and not themselves.</li> <li>• On 18 July 2023, Woodside emailed Yindjibarndi NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that Yindjibarndi advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.</li> <li>• On 26 July 2023, Woodside emailed Yindjibarndi Woodside's planned Program of Ongoing Engagement with Traditional Custodians.</li> <li>• <b>(3)</b> On 1 August 2023, Yindjibarndi emailed Woodside in response to the Program of Ongoing Engagement from Woodside and asking that Oil and Gas matters relating to Yindjibarndi be directed to NYFL</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) Yindjibarndi has provided a response and advised that it will not be providing any comment on the proposed activity.</p> <p>(2) Yindjibarndi expressed that they would prefer that traditional owner groups with land and sea adjacent to and within the precinct of the projects provide comment.</p> <p>(3) Yindjibarndi has instructed Woodside that it will be represented by NYFL in ongoing discussion about EP's.</p>	<p>(1) Woodside accepts Yindjibarndi's response.</p> <p>(2) Woodside agrees and respects Yindjibarndi's position that traditional owners whose land and sea are adjacent to or within the precinct of the projects should be able to provide comment.</p> <p>(3) Woodside will engage with NYFL on behalf of Yindjibarndi for ongoing consultation related to this activity, separate from consultation under Reg 11A.</p> <p>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 <b>Section 7.15</b>).</p>	<p>(4) Not required.</p> <p>(5) Not required.</p> <p>(6) Future correspondence will be sent through NYFL.</p> <p>Woodside has implemented a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as <b>PS 16.2.1</b> in this EP.</p>

### **Buurabalayji Thalanyji Aboriginal Corporation (BTAC)**

BTAC is established under the Native Title Act 1993 by the Thalanyji people to represent the Thalanyji people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has consulted under Regulation 11A with BTAC by providing sufficient information, a reasonable period of time and opportunity for BTAC to make an informed assessment of the possible consequences of the activities on functions, interests or activities. Woodside has addressed each objection or claim made by BTAC. Woodside has included cultural values and controls relevant to Woodside's understanding of BTAC's functions, interests and activities in its environment plan and in response to topics raised during consultation by BTAC.

As demonstrated in the summary below and consultation record that follows, consultation with BTAC complies with Regulation 11A and is complete.

#### **Summary**

##### **Sufficient Information:**

- Woodside sought direction on BTAC's preferred method of consultation. This has not resulted in a face-to-face meeting with the Board, however, BTAC has exchanged multiple correspondence on the activity and telephone engagements with BTAC representatives. Woodside has offered to coordinate meetings at the location of BTAC's choosing, with BTAC nominated representatives. As sufficient information and a reasonable period have been provided (see below), any meetings would be considered as ongoing engagement post regulation 11A consultation.
- Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to BTAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format.
- Confirmed the purpose of consultation and set out in detail what was being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and interested individuals.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan".
- Provided response to questions asked about the activity through consultation. Through these questions, BTAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.

##### **Reasonable Period:**

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside commenced consultation with BTAC in January 2023. Woodside has since addressed and responded to BTAC queries over 9 months, demonstrating a "reasonable period" of consultation.

Woodside advised that BTAC could request the particular information provided in the consultation not be published (to align with 11A(2)(4))

Woodside asked BTAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via discussions and written exchanges to further understand the environment in which the activity will take place. BTAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on BTAC's functions, interests or activities.

#### **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, 2023, 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:
  - BTAC's expectations for consultation - how can Woodside and BTAC best work together.
  - BTAC's aspirations and plans - how can Woodside support BTAC 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 2023 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 2.12) 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.
- On 24 January 2023, BTAC emailed Woodside acknowledging it had received the information.
- On 27 January 2023, Woodside placed a phone call and as there was no answer, left a voice message and emailed BTAC to follow up on the information provided (Appendix F, reference 3.14).
- On 27 January 2023, BTAC emailed Woodside to acknowledge receipt of information and said they would be meeting within the week and would be in contact following their meeting.
- On 13 February 2023, BTAC representative called and spoke to Woodside asking what Woodside was proposing for next steps for consultation and whether Woodside would like to meet with the BTAC Board. The Council of Thalanyji Elders or present at a common law meeting. Woodside said they would be guided by BTAC, but suggested initially suggested the BTAC Board. Following a suggestion that the group may benefit from an anthropologist to articulate sea country values, Woodside

said they would look at those sorts of request on a case-by-case basis, Woodside also confirmed they are able to support consultation meetings. BTAC representative said he would discuss Woodside Eps with BTAC and aim to respond by 20 February 2023.

- 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.
  - **(1) (2)** BTAC confirmed that BTAC on behalf of Thalanyji people has interests and that the Thalanyji people have an enduring deep connection to sea country north of Onslow, extending out to islands off the Pilbara coast such as the Montebello islands, Barrow Island and the Mackerel Islands.
  - BTAC advised it was seeking the opportunity to engage with Woodside and NOPSEMA on the activity.
  - **(5)** BTAC advised it has not specifically developed values regarding Sea Country into a format that could be articulated for consultation and 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.
  - **(3)** 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 protect its values and interests.
  - **(4)** 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.
  - **(6)** 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 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 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.
  - **(2)** 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.
- **(3)** 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.
- **(4)** 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 will formalise the matters outlined in its correspondence between Woodside and BTAC 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:
      - (5)** 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.

- **(4)** 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 17 March 2023 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.
- **(1) (2)** 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.
  - **(6)** 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 28 April 2023, Woodside emailed BTAC to follow up in relation to BTAC's proposed collaboration agreement and confirmed Woodside's intention to submit this EP on the understanding that BTAC is agreeable to this course of action, on the basis that we will progress the collaboration agreement. Woodside asked BTAC to identify if it had misinterpreted BTAC's position.
- On 4 May 2023, Woodside called BTAC. It was discussed that:
  - Woodside would be sending BTAC more EPs (for other activities) for consultation.
  - **(6)** Woodside is working on draft key terms/principles for the collaboration agreement for BTAC's consideration.
  - A meeting between Woodside and the BTAC board may be possible in June.
  - Woodside intended to submit the Scarborough EPs (including this proposed activity) soon.



- On 4 May 2023, BTAC emailed Woodside to continue discussion regarding a potential future meeting between Woodside and the BTAC board to discuss activities on Thalanyji Country, activities for which BTAC's ongoing consultation is sought, the collaboration agreement and other items not related to this proposed activity.
- **6)** On 14 June 2023, Woodside emailed BTAC attaching a letter setting out a draft framework for ongoing consultation which includes recording of sea country values, commitments to regular three-monthly meetings, support for BTAC's capacity to engage, a set of milestones for agreeing the framework and commencement of implementation.
- On the 6 July 2023, Woodside attempted to make contact via phone call, but BTAC did not answer.
- On the 7 July 2023, Woodside attempted to make contact via phone call, but BTAC did not answer.
- On the 10 July 2023, Woodside followed a phone call with BTAC with an email to seek further confirmation that BTAC did not object to Woodside's submission of a number Environmental Plans (including this one) that it is planning to submit to NOPSEMA. Woodside outlined a series of commitments to BTAC to ensure ongoing consultation and a positive working relationship continues.
- On 19 July 2023, Woodside emailed BTAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that BTAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- On 19 July 2023, Woodside emailed BTAC seeking a time to continue discussion regarding a draft presentation to meeting between Woodside and the BTAC Board about activities on Thalanyji country including other items not related to this proposed activity, and the collaboration principles.
- On 19 July 2023, BTAC emailed Woodside to organise a time for the discussion.
- On 20 July 2023, Woodside emailed BTAC a draft presentation for discussion.
- On 21 July 2023, Woodside emailed BTAC a Teams meeting invite for 28 July 2023.
- On 21 July 2023, BTAC accepted the meeting invite.
- On 26 July 2023, Woodside emailed BTAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 26 July 2023, Woodside emailed BTAC confirming the planned meeting for 28 July 2023, a presentation regarding consultation, and re-sent the draft presentation sent on 20 July 2023.
- On 28 July 2023, BTAC emailed Woodside with outcomes of meeting, confirming Woodside had set aside funding for engagement, Woodside wish to meet with BTAC board (or sub-committee) as soon as available to discuss offshore activities/EPs. Woodside will prepare a draft framework agreement to address consultations in relation to NOPSEMA matters.
- On 31 July 2023, Woodside emailed BTAC noting that Woodside would be open to funding a special meeting with the board or sub-committee and requesting a cost estimate for such a meeting.
- On 31 July 2023, Woodside emailed 3 letters to BTAC, 1 of those letters related to the issue of a s91 license for this EP. The 2nd letter outlined support for an ethnographic assessment to:
  - **(2)** Identify sea country values generally sufficient to inform all Woodside EP's.
  - Any work necessary to clarify or define the offshore areas that are relevant to the Thalanyji People.
  - The delivery of interim reports if this will enable prioritising matters considered most critical by BTAC.
  - Woodside will be responsible for all reasonable costs to complete the assessment.

- Confirm BTAC retains intellectual property.  
The 3rd letter provided information regarding this EP activities as they relate to Thalanyji country. Woodside provided this information to assist Thalanyji to define and articulate sea country values so Woodside could mitigate any potential impacts. Woodside provided timeframes for activities and a map depicting relevant Islands and this EP activity area.
- On 3 August 2023, Woodside emailed BTAC regarding the acceptance of different Scarborough EP, and asking for information in accordance with conditions of acceptance of the EP, specifically whether BTAC was aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform management of the activity. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 9 August 2023, Woodside emailed BTAC again seeking feedback and information relating to the different Scarborough EP, stating the conditions of acceptance of the EP:
  - If BTAC was aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
  - If there was any information they wished to provide on cultural features and/or heritage values.
  - The email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement. The email also described the purpose of consultation.
- On 11 August 2023, BTAC emailed Woodside notifying that a response could be expected by the end of the week.
- On 15 August 2023, Woodside telephoned and emailed BTAC following up on correspondence from 31 July 2023, requesting to meet and discuss matters with BTAC.
- On 22 August 2023, BTAC emailed Woodside acknowledging correspondence and noting they would come back with a time to meet and progress matters within the following weeks.
- On 23 August 2023, Woodside emailed BTAC requesting to meet for an initial discussion to layout the various matters that have been under discussion, including BTAC's capacity and priority areas previously identified by BTAC.
- On 14 September 2023, BTAC emailed a letter to Woodside regarding a framework agreement with BTAC. The intent of the agreement would be to formalise a co-ordinated, streamlined approach to progressing meaningful ongoing engagement and consultation. The letter included areas the agreed framework could address, and confirmed that the agreed framework would allow BTAC to meaningfully comment on a range of issues including:
  - How/whether EP activities could impact cultural values, interests and customary or organisational activities and concerns and useful ways these could be addressed.
  - The content of EPs prior to submission to NOPSEMA.
  - Appropriate ways for mitigating risk and ensuring ongoing social licence.
- **(7)** A further letter was attached outlining a proposed cost recovery mechanism for consultation activities, and BTAC stated that it did not sanction or endorse any consultation occurring without cost recovery.
- On 14 September 2023, Woodside emailed BTAC acknowledging the previous email, advising of the planned start date for the activity, and once again requesting if BTAC was aware of any other people with whom Woodside should consult, and whether there was any information BTAC wished to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023. The Summary Information Sheet for this activity was attached (Appendix F, reference 5.61).

- On 20 September 2023, BTAC emailed Woodside requesting a response from Woodside about accepting the proposed costs acceptance letter which BTAC sent on 14 September 2023 and requesting a list of current and ongoing activities Woodside are seeking ongoing consultation for.
- On 20 September 2023, BTAC emailed Woodside further to their earlier email, requesting a response to BTAC’s cost proposal, a list of Woodside activities for ongoing consultation and an update on the status of the framework agreement for BTAC’s review.
- **(6)** On 22 September 2023, Woodside emailed BTAC accepting BTAC’s proposed consultation fee structure, the list of activities that Woodside has consulted BTAC on and advising that the draft framework agreement was under internal review.
- On 26 September BTAC emailed Woodside acknowledging EP information received, signed costs and acceptance letter and that a draft agreement was currently under internal Woodside review. The email confirmed BTAC will be assisted with legal advice from Banks-Smith & Associates (BSA).
- On 27 September 2023, BSA emailed Woodside clarifying that they are instructed by BTAC on this matter.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) BTAC stated that their interests include archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and the Montebello Islands.</p> <p>(2) BTAC has a cultural obligation to care for the environmental values of sea country.</p> <p>(3) Requested Woodside supports BTAC in obtaining technical advice relating to the proposed activity which was sent to BTAC.</p> <p>(4) Expressed desire to be involved in local emergency response capability, potentially via an Indigenous Ranger Program.</p> <p>(5) BTAC has not specifically developed values regarding Sea Country into a format that could be articulated for consultation. BTAC sought support from Woodside to enable BTAC to</p>	<p>(1) The nearshore islands identified by BTAC do not fall within the EMBA and will not be impacted by any of the activities set out in the EP.</p> <p>(2) Woodside assessed BTAC’s cultural obligation to care for environmental values of -26 Sepsea country to represent potential cultural values.</p> <p>(3) Woodside has offered financial support for technical advice and other support that has not been taken up (eg 17 March 23 letter).</p> <p>(4) Woodside will engage in ongoing consultation with BTAC for the purposes of ongoing monitoring, management and emergency response associated with environmental risk (eg 17 March letter).</p> <p>(5) Woodside agreed to support the articulation and recording of sea country values. Since Woodside formally offered to support BTAC undertake an ethnographic assessment in July 2023, BTAC has not indicated that it desires to initiate the activity. Completion of an ethnographic assessment is not required to undertake or complete consultation under Reg 11A. Opportunity to undertake this work continues</p>	<p>(1) Not required</p> <p>(2) Woodside updated Section 4.9 to record BTAC’s interests and potential cultural values and assessed potential impact on these, including controls, in Section 6.10.</p> <p>(3) Not required</p> <p>(4) The Program for Ongoing Engagement with Traditional Custodians (Appendix L) includes commitments to social investment to support Indigenous Ranger programs, and support for Indigenous oil spill response capabilities.</p> <p>(5) Woodside has developed the Thalanyji Sea Country Management process described in the EP Section 7.6 to develop a robust understanding of Thalanyji Sea Country cultural values and heritage features, in the absence of the ethnographic survey. Woodside has taken all reasonable steps to identify cultural features and heritage features of Thalanyji people within the EMBA. This is described in Section 4.9. The proposed Collaboration Agreement and PS 16.2.1 enables an ethnographic survey to be undertaken at a later date. Should feedback be received after the EP has been accepted (including any relevant new information on</p>

<p>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.</p> <p>(6) BTAC proposed a Collaboration Agreement as an appropriate mechanism to provide ongoing feedback to Woodside regarding its activities</p> <p>(7) BTAC does not endorse any consultation without appropriate cost recovery.</p>	<p>under the proposed Collaboration Agreement (see 6) as part of ongoing engagement. Woodside has been able to develop a robust understanding of Thalanyji Sea Country cultural values and features in absence of this assessment.</p> <p>(6) Separate from consultation under Reg 11A, Woodside will establish a Collaboration Agreement with BTAC. The agreement would be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members, and slide packs associated with offered face-to-face meetings.</p> <p>Woodside and BTAC have agreed on a Costs Acceptance Letter. Woodside has developed a Framework Agreement for ongoing consultation which is under internal review and will be forwarded to BTAC for their consideration in October 2023. The agreement includes support for recording and articulation of Sea Country values.</p> <p>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 7.15).</p> <p>(7) Woodside assesses that the proposed Collaboration Agreement is an appropriate mechanism for addressing appropriate cost recovery for BTAC. Woodside has already offered BTAC support for technical advice (see 3), and informed BTAC that it would financially support consultation meetings (eg 13 Feb 23 discussion). As described in the summary above, Woodside has afforded sufficient information and reasonable time for BTAC to provide feedback in the course of preparing this EP.</p>	<p>cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.15). PS 16.3.1 ensures that potential impacts to newly identified cultural values is managed to ALARP and Acceptable levels.</p> <p>(6) and (7) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as PS 16.2.1 in this EP. This includes continued engagement regarding the Collaboration Agreement that Woodside seeks with BTAC, which could include support for BTAC to define and articulate values, provision of ongoing feedback and cost recovery. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix L.</p>
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**Robe River Kuruma Aboriginal Corporation (RRKAC)**

RRKAC is established under the Native Title Act 1993 by the Robe River Kuruma people to represent the Robe River Kuruma people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with RRKAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information:

- Woodside Sought direction on RRKAC's preferred method of consultation. This resulted in a face-to-face meeting being coordinated at the location of RRKAC's choosing, with RRKAC nominated representatives. This meeting included Woodside presenting information in a format and style that was readily accessible and appropriate.
- Provided Consultation Information Sheets and Consultation Summary Sheets developed by Indigenous staff to RRKAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Confirmed the purpose of consultation and set out in detail what was being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan
- Provided response to questions asked about the activity through consultation. Through these questions, RRKAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
- Advised that RRKAC could request the particular information provided in the consultation not be published (to align with 11A(2)(4))

Reasonable Period:

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to RRKAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to RRKAC over 9 months, demonstrating a "reasonable period" of consultation.

Woodside asked RRKAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. RRKAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on RRKAC's functions, interests or activities.

**Summary of information provided and record of consultation:**

- On 20 January 2023, Woodside emailed RRKAC advising of the proposed activity (Appendix F, reference 3.7) 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 discussed 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 5.46) 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 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.
- **(1)** 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 happened 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.
  - Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video to show the pipelay which was designed for public audience.
  - Woodside described the proposed activity using visual aids and a video.
  - HAC asked whether the pipeline at the shore crossing will impact any heritage sites, Woodside responded that the trunkline would enter the existing Woodside Pluto gas plant and no heritage onshore would be impacted. A map was used to show the crossing site relative to known heritage locations.

- 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.
- **(2 & 3)** On 3 May 2023, Woodside emailed RRKAC and attached a letter (Appendix F reference 5.55):
  - 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.
- On 19 July 2023, Woodside emailed RRKAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that RRKAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult, No response was received to this email
- **(3)** On 26 July 2023, Woodside emailed RRKAC Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- On 2 August 2023, Woodside emailed RRKAC regarding the acceptance of a different Scarborough EP, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether RRKAC was aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
- On 9 August 2023, Woodside emailed RRKAC again seeking feedback and information relating to the accepted Scarborough EP, stating the conditions of acceptance:
  - if RRKAC were aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
  - if there was any information RRKAC wished to provide on cultural features and/or heritage values
  - the email gave the planned commencement of activity under that EP and stated that if no feedback had been received by COB on the day prior, it would be taken to mean no information was desired to be given prior to commencement.
- On 11 August 2023, RRKAC emailed Woodside in response to another matter and in addition requesting ongoing consultation and training opportunities for rangers to prepare rangers for caring for sea and coastal country.
- On 14 August 2023, Woodside emailed RRKAC thanking them for their response and requesting to meet to discuss training opportunities for rangers.
- On 14 August RRKAC emailed Woodside agreeing to a meeting and indicating they would arrange a suitable time for a discussion.
- On 14 September 2023, Woodside emailed RRKAC acknowledging the previous email, advising of the planned start date for the activity, and once again requesting if RRKAC was aware of any other people with whom Woodside should consult, and whether there was any information RRKAC wished to provide on cultural values.

<p>The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023. The Summary Information Sheet for this activity was attached (Appendix F, reference 5.62).</p> <ul style="list-style-type: none"> <li>• (3) On 15 September 2023, RRKAC emailed Woodside noting the compliance burden on industry and RRKAC, advising they have noted Woodside's plans, and that they aren't resourced to adequately respond, and would require Woodside to fund additional resources.</li> <li>• (3) On 18 September 2023, Woodside emailed RRKAC confirming that Woodside will provide funding to enable groups to participate in consultations.</li> </ul>		
<p><b>Summary of Feedback, Objection or Claim</b></p>	<p><b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b></p>	<p><b>Environment Plan Controls</b></p>
<p>(1) During face-to-face engagements related to this activity and others, the RRKAC/ HAC requested further information on topics related to this proposed activity which was responded to during the meeting:</p> <ul style="list-style-type: none"> <li>- Emergency preparedness.</li> <li>- What happens with a small diesel spill.</li> <li>- Pipeline operation</li> <li>- The RRKAC/HAC raised feedback and request for further information on the Scarborough project more broadly which will be provided as part of ongoing engagement.</li> </ul> <p>(2) The RRKAC/HAC expressed a desire for ongoing engagement and partnership.</p> <p>(3) RRKAC noted that they are insufficiently resourced to fully engage and respond regarding EPs.</p>	<p>(1) Woodside responded to RRKAC/HAC's requests for further information during face-to-face engagements, and no further information was requested on these topics.</p> <p>(2) Woodside supports ongoing engagement and have responded to RRKACs advice about the limitations on their resources, Woodside has offered to support RRKAC in correspondence sent in May and September 2023, however these offers have not been taken up as yet.</p> <p>(3) Woodside has assessed the Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with RRKAC and address appropriate support for resourcing, separate from consultation under Reg 11A, Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members, and a face to face meeting on 31 March 2023 for which Woodside met RRKAC's costs, with appropriate material (pictures, maps, videos) and project attendance allowing opportunity to ask questions and seek further understanding.</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) &amp; (3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans referenced as <b>PS 16.2.1</b> in this EP. This includes addressing RRKAC's resourcing issue for ongoing consultation via a Framework Agreement.</p>



**Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)**

NTGAC is established under the Native Title Act 1993 by the Baiyungu people to represent the Baiyungu people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has consulted under Regulation 11A with NTGAC by providing sufficient information, a reasonable period of time and opportunity for NTGAC to make an informed assessment of the possible consequences of the activities on functions, interests or activities. Woodside has addressed each objection or claim made by NTGAC. Woodside has included cultural values and controls relevant to Woodside's understanding of NTGAC's functions, interests and activities in its environment plan and in response to topics raised during consultation by NTGAC.

As demonstrated in the summary below and consultation record that follows, consultation with NTGAC complies with Regulation 11A and is complete.

**Summary**

**Sufficient Information:**

- Woodside Sought direction on NTGAC's preferred method of consultation. This resulted in two face-to-face meetings being coordinated at location of NTGAC's choosing, with NTGAC nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate.
- Provided Consultation Information Sheet and Consultation Summary Sheets to NTGAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity in a digestible, plain English format.
- Articulated planned and unplanned environmental risks and impacts, with proposed controls to manage potential impacts to ALARP and acceptable levels.
- Confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Suggested that information and request for feedback be distributed to members as required.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan"
- Provided response to questions asked about the activity through consultation. Through these questions, NTGAC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
- As per a request from NTGAC, Woodside funded YMAC's environmental scientist to attend two face-to-face meetings to support consultation and funded a YMAC lawyer to attend the August meeting with NTGAC. This assisted in ensuring any technical information was provided in a way which allowed NTGAC to make an informed assessment of the possible consequences of the activities on the functions, interests or activities.

**Reasonable Period:**

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside commenced consultation with NTGAC in January 2023. Woodside has since addressed and responded to NTGAC queries over 9 months, demonstrating a "reasonable period" of consultation.

Woodside advised that NTGAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))

Woodside asked NTGAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. NTGAC has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NTGAC functions, interests or activities.

Woodside does not agree with NTGAC's assertion that it has not yet completed consultation under regulation 11A for the activity. Woodside has assessed the claims and feedback raised by NTGAC, as detailed later in this section alongside Woodside's response to the claims. Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NTGAC's functions, interests, or activities.

#### **Summary of information provided and record of consultation:**

YMAC is the Native Title Representative Body (NTRB) for the Yamatji and Pilbara regions, which includes NTGAC. NTRBs exist to provide assistance to native title claimants and holders in regard 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 contact for identifying cultural values in nearby Australian Marine Parks. Woodside sought to understand if 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 the broader project footprint.
  - YMAC requested Woodside provide the relevant detailed information relating to the location and extent of the project.
  - YMAC directed Woodside that consultation related to Scarborough Project would be best directed to Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation
  - YMAC did not direct Woodside to engage with NTGAC, however NTGAC was identified as a relevant person under methodology outlined in 5.X and YMAC is listed as NTGAC's preferred contact on the ORIC website and is therefore Woodside's primary contact when engaging NTGAC.
- On 6 January 2023, Woodside phoned NTGAC via the representative body Yamatji Marpa 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 3.3) 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, asking what interests NTGAC and its members may have within the EMBA and whether they required any information to prepare for a meeting.
- On 27 January 2023 Woodside phoned and emailed NTGAC/YMAC to follow up on the information provided and information sought. 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 February 2023. 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. Woodside respected NTGAC's response and supported all NTGAC's proposed attendees to attend the meeting.

- 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 Board and YMAC representatives:
  - 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.
  - Woodside provided an overview of each proposed activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video to show the pipelay which was designed for public audience.
  - Woodside noted that decommissioning and the ability to remove equipment has been part of the design process across the Scarborough Project, including for the trunkline.
  - 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 several years Woodside has been undertaking modelling and research to understand impacts like dredge plumes. This also incorporates real monitoring observations from previous activities.
  - 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.
  - **(1, 2)** 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.
  - **(1)** 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.
  - **(2)** While discussing another activity, NTGAC expressed interest in whale sharks
  - **(1)** NTGAC asked whether local traditional owners have been engaged about dredging.
  - Woodside responded that significant and ongoing consultation with Murujuga Aboriginal Corporation has been undertaken regarding this, for over two years. Dredging will be up to 38 km, and it is a goal to limit the amount of dredging required.
  - The EMBA for the proposed Scarborough activity was displayed, and the individual worst-case loss of containment scenario described.
  - 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 types of 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, Woodside desires it to be a jointly held process and that if NTGAC desires any support or assistance to 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.
- On 13 March 2023, Woodside met with NTGAC's legal representatives to discuss consultation on the Scarborough Project, preferred method and locality of consultation meetings, and to note that they will assist groups with funding to hold meetings on an agreed basis.
- On 22 March 2023, Woodside followed up by phone with NTGAC/YMAC on any feedback on the proposed activities. None was received.
- 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. No further response was received to Woodside's request for feedback on the activity.
- On 19 April 2023, Woodside emailed YMAC/NTGAC following up with information offered at the meeting of 13 March 2023; management of emissions, organisations that may provide independent expertise and re-iterating they would like to meet with NTGAC.
- **(3)** On 20 June 2023, in two separate emails NTGAC replied they would return to Woodside with a suitable date and sought confirmation that Woodside would again fund the attendance of the in-house environmental scientist.
- On 20 June 2023, Woodside replied they were happy to fund the in-house environmental scientist.
- On 21 June NTGAC/YMAC emailed Woodside confirming a full day workshop to cover all activities
- On 21 June 2023, Woodside emailed NTGAC seeking a pre-meet to plan the workshop and offer further assistance.
- On 30 June 2023, NTGAC emailed Woodside with a budget estimate for the meeting in Exmouth.
- On 5 July 2023, Woodside replied confirming the date and that they would pay for the costs outlined in the budget.
- On 17 July 2023, YMAC emailed Woodside referring to the draft YMAC consultation framework for PBCs and asked that the workshop focus on strategic planning with additional funding.
- On 19 July 2023, Woodside emailed NTGAC NOPSEMA's Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside's request that NTGAC advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- On 24 July 2023, Woodside agreed to the change of workshop focus and additional funding, proposed an agenda and a pre-meeting for joint planning.

- On 25 July 2023, Woodside emailed the YMAC CEO (and copied the NTGAC representatives) responding to the draft YMAC Framework for Consultation and emailing Woodside's planned Program of Ongoing Engagement with Traditional Custodians, noting that Woodside's Program would complement what is proposed in NTGAC's proposed Framework. The email proposed a meeting at YMAC's earliest convenience.
- On 28 July 2023, NTGAC confirmed availability for a pre meeting.
- On 31 July 2023, Woodside emailed NTGAC/YMAC to accept a pre meeting date.
- On 9 August 2023, Woodside emailed NTGAC/YMAC requesting clarity around the meeting scheduled for 15 August 2023.
- On 9 August 2023, Woodside emailed NTGAC/YMAC again seeking feedback and information relating to a separate Scarborough EP that had been accepted, stating the conditions of acceptance of that EP:
  - if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
  - if there is any information you wish to provide on cultural features and/or heritage values.
- **(4)** On 11 August 2023, NTGAC/YMAC emailed Woodside stating that NTGAC had not yet been consulted regarding the separate accepted Scarborough activity, that the proposed time frame for consultation is not workable for NTGAC, that they would be raising this with NOPSEMA and wished to discuss further in the meeting planned for 15 August 2023.
- On 11 August 2023, Woodside emailed NTGAC/YMAC noting that activity under Scarborough Seismic would no longer commence on the date previously notified. Woodside confirmed the attendees for the meeting on 15 August 2023.
- On 14 August 2023, NTGAC/YMAC emailed Woodside acknowledging the meeting to be held 15 August 2023.
- On 15 August 2023, Woodside presented to the NTGAC about several EPs including an update on this EP. At the meeting Woodside:
  - Described the Environment Plan framework, referring to the Offshore Petroleum and Greenhouse Gas Storage Act (Environment) Regulations, NOPSEMA's role as regulator and general contents of Environment Plans.
  - Displayed a map of activities open for feedback to be discussed in the meeting and provided a list of other upcoming activities which will be open for consultation in 2023.
  - Provided an update and overview of the Scarborough Project activities including the Marine Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Installation EPs..
  - Described the types of vessels involved.
  - Described planned and unplanned environmental risks and impacts in accordance with tables provided in the Information Sheets for the activities, emphasising that unplanned risks are not expected to occur and are unlikely.
  - Displayed and spoke to the EMBA for each proposed activity, 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.
  - Described planned and unplanned risks and impacts of the activity, and discussed controls in place to manage risks/impacts to ALARP and acceptable levels
  - Stated that Woodside wanted to understand how the functions, activities, or interests of NTGAC and the people it represents may be impacted by any of those activities.
  - Specifically asked the following:
    - How could these activities impact your cultural values, interests, and activities – does protecting the environment do enough to protect your cultural values?
    - What are your concerns about the proposed activities and what do you think we should do about them?
    - Is there anything you would like included in the EPs before submission?
    - Is there anyone else Woodside should consult with about the activities?
  - Advised that Woodside will continue to take feedback from NTGAC for the life of the EP.

- Provided personal contact details for further feedback. Woodside provided NOPSEMA contact details, should NTGAC desire to provide feedback directly to the regulator.
- At the 15 August meeting NTGAC/YMAC asked the following questions and gave the following feedback:
- **(1)** YMAC asked about whale sightings and response.
- Woodside responded that response depended on activity and controls, Marine Mammal Observers are implemented.
- **(1)** NTGAC asked about ballast water discharges, Woodside responded by describing Invasive Marine Species requirements and controls.
- **(5)** A proposed framework for consultation was discussed, involving Woodside funding a General Project Report to be written by an independent suitably qualified and experienced consultant, to be provided to NTGAC initially and then on to Woodside. The General Project Reports were proposed to outline the nature of the activities for each phase of the project and the risks associated with each of the relevant activities
- Terms for ongoing engagement were discussed, including frequency, participation, and content in context of the proposed General Project Report
- **(6)** NTGAC Strategic Plan and relation to potential Woodside social investment opportunities were explored.
- NTGAC stated their consultation expectations (two-way dialogue preferred over one-way presentations and requested that consultation meetings cover whole projects or phases rather than single EP activities which is too time consuming).
- NTGAC requested that a table of EPs be submitted by December with a timeline.
- **(4)** NTGAC stated that they did not consider that they had been consulted on other EP's based on engagement to date, stating that the information provided had been too technical.
- On 31 August Woodside emailed NGTAC/YMAC to provide a copy of the presentation from 15 August and communicating Woodside's understanding of next actions:
- YMAC to provide a first draft of a consultation agreement. Woodside has offered to provide support or first draft if NTGAC desired, however this offer of support has not been accepted.
- YMAC to prepare the first draft of a general report.
- Woodside to provide a list of upcoming activities.
- Agreed to continue discussions relating to key community focus areas highlighted by NTGAC.
- Feedback from NTGAC on the appropriateness of the information given by Woodside (too technical) to enable NTGAC to provide feedback.
- The email also noted that Woodside considers consultation has commenced and is ongoing, however Woodside will work with NTGAC to develop the process further.
- On 31 August 2023, NTGAC/YMAC emailed Woodside confirming they would respond shortly to the outcomes as assessed by Woodside and requesting response to queries in relation to another activity.
- On 1 September Woodside emailed NTGAC/YMAC, acknowledging information requested would be provided as soon as possible.
- On 14 September 2023, Woodside emailed NTGAC (Appendix F, reference 5.63) advising of the planned start date for the activity, and once again requesting if NTGAC is aware of any other people with whom Woodside should consult, and if there is any information NTGAC wish to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023, but reiterated that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached. No response was received to this email.

Woodside will continue to pursue an ongoing two-way relationship with NTGAC under the Proposed Program of Ongoing Engagement with Traditional Custodians

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) During face-to-face engagements on 16 Feb and 15 Aug 2023 related to this activity and others, the NTGAC requested further information on topics related to this proposed activity which was responded to during the meetings:</p> <ul style="list-style-type: none"> <li>• How EMBA's are developed.</li> <li>• Ballast water discharges</li> <li>• Whale sightings and response</li> <li>• Whether other Traditional Owners had been consulted about dredging</li> </ul> <p>(2) NTGAC have expressed a general interest in whales and whale sharks. Woodside discussed controls protecting whales and whale sharks from an ecological perspective during meetings in which they were raised, and no further feedback or comment was received on these topics.</p> <p>(3) NTGAC requested funding for YMAC's in-house environmental scientist.</p> <p>(4) NTGAC claimed that they have not been consulted about the activity to date, stating that they could not provide information on cultural values because the information provided has been</p>	<p>(1) Woodside responded to NTGAC's requests for further information during face-to-face engagements in which they were raised, and no further information was requested on these topics.</p> <p>(2) Woodside noted NTGAC's interest in whales and whale sharks</p> <p>(3) Woodside funded YMAC's environmental scientist to attend two face-to-face meetings to support consultation and funded a YMAC lawyer to attend the August meeting with NTGAC. No feedback was received from this activity.</p> <p>(4) Woodside does not agree with NTGAC's claim that it has not yet been consulted on the activity, or that information provided has been too technical. Woodside considers regulation 11A consultation is complete and closed. Woodside met with NTGAC nominated representatives, at location of NTGAC's choice on 16 Feb and 15 Aug 2023 for multiple hour sessions where the activity was described face to face by Woodside project representatives, subject matter experts and First Nations relations advisers (see section 5 for approach). This included specifically developed "plain English" material developed by First Nations personnel in collaboration with technical experts, maps, pictures and a short video visually communicating the pipelay process. During the meeting, NTGAC and YMAC representatives were encouraged to control the pace of the engagement and seek clarification. NTGAC and YMAC asked questions about the activity (see point 1) which indicates that material was engaged with. Woodside has also funded YMAC's in-house environmental scientist to support consultation. Woodside has addressed and responded to NTGAC over 9 months, demonstrating a "reasonable period" of consultation.</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside updated Section 4.9 to reflect NTGAC's interests and potential cultural values, including whales and whale sharks, and assessed potential impact on these, including controls, in section 6.10.</p> <p>(3) Not required</p> <p>(4) Not required</p> <p>(5) (6) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans, referenced as PS 16.2.1 in this EP. This includes continued engagement regarding NTGAC's proposed Consultation Framework which will be applied to ongoing consultation, and potential support for their Strategic Plan. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix L.</p>

<p>too technical and that timeframes were not sufficient.</p> <p>(5) NTGAC are developing the first draft of a Consultation Agreement, and General Report. The proposal for the General Report is that it would outline the nature of the activities for each phase of the project and the risks associated with each of the relevant activities. Woodside are awaiting receipt of the initial draft of the General Report.</p> <p>(6) NTGAC are interested in exploring social investment opportunities with Woodside which may support NTGAC's Strategic Plan.</p>	<p>(5) Separate from consultation under Reg 11A for this activity, Woodside will establish a Consultation Agreement with NTGAC. The Consultation Agreement and General Report/s would be used to frame ongoing consultation to occur as part of Woodside's commitment to post Reg 11A consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, multiple face to face meetings with appropriate material (pictures, maps, videos) and project attendance allowing opportunity to ask questions and seek further understanding, and agreement to fund NTGAC/YMAC environmental scientist who was also present at the meetings.</p> <p>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 <b>Section 7.15</b>).</p> <p>(6) Woodside is continuing to work with NTGAC regarding social investment opportunities. Woodside has assessed that the Framework for Ongoing Consultation with NTGAC is an effective mechanism for exploring opportunities for alignment with NTGAC's Strategic Plan</p>	
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**Malgana Aboriginal Corporation**

Malgana is established under the Native Title Act 1993 by the Malgana people to represent the Malgana people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Malgana for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

Sufficient Information:

- Woodside Sought direction on Malgana's preferred method of consultation. This resulted in two face-to-face meetings being coordinated at location of Malgana 's choosing, with Malgana nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate.



- Provided Consultation Information Sheet and Consultation Summary Sheets developed by Indigenous staff to Malgana. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan
- Provided response to questions asked about the activity through consultation. Through these questions, Malgana have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
- Advised that Malgana can request that particular information provided in the consultation not be published (to align with 11A(2)(4))

**Reasonable Period:**

- Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to Malgana over 9 months, demonstrating a "reasonable period" of consultation.

Woodside asked Malgana if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. Malgana has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Malgana functions, interests or activities.

**Summary of information provided and record of consultation:**

- On 20 January 2023, Woodside emailed Malgana advising of the proposed activity (Appendix F, reference 2.19) 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 1 February 2023, Woodside phoned and left a voice message, and sent an email to Malgana, to follow up on the information provided (Appendix F reference 4.23) and information sought.
- 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 asked if one or two hours was suitable for Woodside's presentation and discussion.
  - **(3)** Malgana asked Woodside to provide financial support for consultation meeting costs
- 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.
  - **(3)** Woodside agreed to pay meeting costs
- On 19 March 2023, Woodside emailed Malgana to propose an alternate date for the meeting so that required project personnel would be available.
- On 22 March 2023, Malgana emailed Woodside to agree the proposed date and coordinate arrangements for the meeting.
- On 23 March 2023, Woodside emailed Malgana to confirm arrangements for the meeting and agree a budget proposal.
- On 23 March 2023, Malgana emailed with an invoice for 50% advance payment of meeting budget.
- 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.
  - **(1)** 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 felt was missing in the information provided during the meeting, or any issues or concerns.
  - **(2)** 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.
  - **(4)** 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 EMBA's are prepared and their relevance to consultation.
  - **(1)** 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 committed to providing further detail on how Shark Bay hydrodynamics is resolved in the model to Malgana.
  - Woodside provided an overview of the broader Scarborough Project and overview of activities.
  - Woodside described the proposed activity, using a video and visual aids.
  - Woodside provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video to show the pipelay which was designed for public audience.

- **(1)** Malgana asked whether the pipelay vessel would need to return to shore to collect more pipe sections, Woodside responded that it would be continually supplied by other vessels so that it can continue laying.
- 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.
- **(1 & 4)** 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:

- **(4)** Agreement that an ongoing partnership should be formed.
- **(2)** Emphasised the sensitivity and importance of Shark Bay culturally and environmentally.
- **(1)** Indicated concerns regarding hydrodynamic modelling and reflection of flow into the bay.
- Discussion on how feedback helps Woodside improve Environment Plans

Malgana requested:

- **(1)** 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
- **(1)** 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 2023, and their careful consideration of the matters presented.
  - Woodside acknowledged that Malgana has interests in the EMBA and noted that they 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 2023:

- 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.
- **(1)** 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.

- **(3)** 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 been received in the course of preparing the EP. A suggested list of experienced and reputable industry environmental consultants was provided. To date, this offer has not been taken up.
- Woodside notified that the feedback and the letter from Malgana would 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.
- 19 July 2023, Woodside emailed Malgana NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside’s request that Malgana advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email.
- **(4)** On 26 July 2023, Woodside emailed Malgana Woodside’s planned Program of Ongoing Engagement with Traditional Custodians.
- **(1 & 2)** On 1 August 2023, Woodside emailed Malgana with follow up information that Malgana requested about hydrocarbon spill modelling which came out of the meeting of 4 April 2023 with Malgana. The information showed that Shark Bay hydrodynamics are adequately resolved in the model, as tidal flushing can be observed. This reinforces that the indication from modelling that the EMBA for the activity does not enter Shark Bay is appropriate.
- **(3)** On 1 August 2023, Woodside emailed Malgana with thanks for the information and noting that Malgana was looking to get an environmental consultant to provide advice to their Board.
- **(3)** On 3 August 2023, Woodside emailed Malgana notifying about another activity and requesting to meet to discuss matters, including the issue raised by Malgana about getting an environmental consultant to give advice to their Board. Woodside also said they were available to catch up over the phone over the next coming days to discuss the above matters and for Malgana to reply with a preferred time. Malgana have not yet responded.
- On 14 September 2023, Woodside emailed Malgana (Appendix F, reference 5.65) advising of the planned start date for the activity, and once again requesting if Malgana was aware of any other people with whom Woodside should consult, and whether there was any information Malgana wished to provide on cultural values. The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023 and reiterating that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) During face-to-face engagements related to this activity and others, Malgana requested further information on topics related to this proposed activity which were responded to during the meeting and in correspondence shortly afterwards:</p> <ul style="list-style-type: none"> <li>• Ability for infrastructure to withstand seismic activity.</li> <li>• Spill response arrangements.</li> </ul>	<p>(1) Woodside responded to Malgana’s requests for further information during face-to-face engagements and follow up emails, and no further information was requested on these topics.</p> <p>(2) Woodside noted Malgana’s interest in sea grasses, stromatolites and microbial mats. 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 4-1.</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside updated Section 4.9 to record Malgana’s interests and potential cultural values, including sea grasses, stromatolites and microbial mats and assessed potential impact on these, including controls, in section 6.10.</p> <p>(3) &amp; (4) Woodside is implementing a program to actively support Traditional Custodians’ capacity for ongoing engagement and consultation on environment plans, referenced as PS 16.2.1 in this EP. This includes</p>

<ul style="list-style-type: none"> <li>Hydrodynamic modelling and reflection of flow into the bay.</li> <li>Ranger training for incident response.</li> </ul> <p>(2) Malgana indicated that they have particular interest in sea grasses, stromatolites, and microbial mats. Malgana also identified a concern regarding spills into Shark Bay and hydrodynamic modelling.</p> <p>(3) Malgana noted that their funding is restricted for these types of engagement and requested funding support, including an environmental consultant to advise the Board.</p> <p>(4) Malgana expressed a desire for ongoing engagement and partnership.</p>	<p>(3) &amp; (4) Woodside supports ongoing engagement and have responded to Malgana’s advice about the limitations on their resources. Woodside has offered to support Malgana in correspondence sent May and August 2023, including support for environmental expertise supplying names of organisation that Malgana may want to consider to conduct the work, however these offers have not been taken up as of yet.</p> <p>Woodside has assessed the Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with Malgana and address appropriate support for resourcing, separate from consultation under Reg 11A, Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members, and a face to face meeting on 04 April 2023 for which Woodside met Malgana’s costs, with appropriate material (pictures, maps, videos) and project attendance allowing opportunity to ask questions and seek further understanding.</p> <p>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 7.15).</p>	<p>addressing Malgana’s resourcing issue for ongoing consultation via a Framework Agreement.</p>
<p><b>Nanda Aboriginal Corporation</b></p> <p>Nanda is established under the Native Title Act 1993 by the Nanda people to represent the Nanda people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.</p>		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Nanda for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p> <ul style="list-style-type: none"> <li>Sufficient Information:</li> </ul>		

- Woodside Sought direction on Nanda's preferred method of consultation. This resulted in two face-to-face meetings being coordinated at location of Nanda's choosing, with Nanda nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate. .
- Provided Consultation Information Sheet and Consultation Summary Sheets developed by Indigenous staff to Nanda. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan
- Provided response to questions asked about the activity through consultation. Through these questions, Nanda have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.
- Advised that Nanda can request that particular information provided in the consultation not be published (to align with 11A(2)(4))
- Reasonable Period:
  - Woodside published advertisements in national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, Northwest Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
  - Woodside has addressed and responded to Nanda over 9 months, demonstrating a "reasonable period" of consultation.

Woodside asked Nanda if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since January 2023 and a genuine two-way dialogue has occurred via meetings and written exchanges to further understand the environment in which the activity will take place. Nanda has engaged with the detail of the activity asking related questions. The details of these engagements are described in the consultation summary below.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on Nanda's functions, interests or activities.

**Summary of information provided and record of consultation:**

YMAC is the Native Title Representative Body (NTRB) for the Yamatji and Pilbara regions, which includes Nanda. NTRBs exist to provide assistance to native title claimants and holders in regard 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 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 contact for identifying cultural values in nearby Australian Marine Parks. Woodside sought to understand if 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 the broader project footprint.
- YMAC requested Woodside provide the relevant detailed information relating to the location and extent of the project.
- YMAC directed Woodside that consultation related to Scarborough Project would be best directed to Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation
- YMAC did not direct Woodside to engage with Nanda, however Nanda was identified as a relevant person under methodology outlined in Section 5 and YMAC is listed as Nanda's preferred contact on the ORIC website and is therefore Woodside's primary contact when engaging Nanda.
- On 20 January 2023, Woodside emailed Nanda via the representative body Yamatji Marlpa Aboriginal Corporation (YMAC) advising of the proposed activity (Appendix F, reference 3.2) 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, asking what interests Nanda and its members may have within the EMBA and whether they required any information to prepare for a meeting.
- On 1 February 2023, Woodside emailed Nanda /YMAC to follow up on the information provided (Appendix F, reference 4.24) and information sought. 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 to ensure Nanda Aboriginal Corporation is fully informed, and able to engage in meaningful consultation:
    - 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:
  - **(3)** 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 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 it welcomed the opportunity to meet with Nanda to establish a relationship and requested a budget estimate and Nanda's preferred meeting date(s) at its earliest convenience.
  - **(3)** 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.
  - **(3)** Woodside advised it considers requests to fund independent experts on a case-by-case basis. Woodside note an expert would need to be agreed between 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 would 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.

- **(3)** 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 2023, Woodside met with Nanda's legal representatives to discuss consultation on the Scarborough Project, preferred method and locality of consultation meetings, and to note that Woodside will assist groups with funding to hold meetings on an agreed basis.
- On 17 March 2023, Woodside emailed Nanda/YMAC following up for a date, cost estimate and logistical details for a meeting. Woodside asked whether a date and budget had been confirmed for a meeting with Nanda, the email also notified Nanda of additional EPs for consideration by the Nanda Board.
- On 23 March 2023, Nanda/YMAC responded inviting Woodside to meet the Board of Directors on 19 April 2023 in Geraldton.
- On 23 March 2023, Woodside emailed Nanda/YMAC accepting the invitation and requesting confirmation of location.
- On 24 March 2023, Nanda/YMAC emailed Woodside confirming location of meeting in Geraldton.
- **(3)** On 29 March 2023, Nanda/YMAC emailed Woodside regarding a budget for the upcoming meeting.
- **(3)** On 5 April 2023, Woodside emailed Nanda/YMAC and accepted the proposed budget.
- **(1)** 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.
  - **(1)** Nanda asked whether Woodside has ever had an oil spill. Woodside said that they have had had small spills but nothing that had lasting impact, and while worst case spills would be discussed today, they have not had anything close to this scale happen before.
  - **(1)** 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.
  - **(1)** 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.
  - **(1)** Nanda asked about control measures to avoid impacts to migratory whales, Woodside described control measures intended to be in place for the activity.
  - **(1)** 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 provided an overview of each proposed Scarborough activity (including Seismic Survey, Drilling and Completions, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation) and a summary of both planned and unplanned impacts and associated controls. This included the use of a video to show the pipelay which was designed for public audience.
  - Woodside described the proposed seabed intervention and trunkline installation activities:
  - **(1)** Nanda asked about the risk of a gas leak from the trunkline. Woodside responded that no hydrocarbon gas will be introduced to the trunkline in this activity, but in operations we consider it to be approximately 1 in 10,000 years and if a leak does happen only gas will be released and no liquid oil.
  - **(1)** Nanda asked about the trunkline route, Woodside explained that it follows seabed contours and follows the existing Pluto trunkline route where possible.
  - Woodside described the planned and unplanned risks/impacts and discussed the EMBA for the activity:
  - **(1)** 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.
- **(3 & 4)** On 19 April 2023, Woodside emailed YMAC/ Nanda/NTGAC following up with information offered at the meeting of 13 March 2023 (with NTGAC); management of emissions, organisations that may provide independent expertise, and re-iterating they would like to meet regularly with YMAC/Nanda/NTGAC. Woodside made note that PBCs may be interested in Woodside's ongoing support and capacity building by way of social investments.



- **(1)** On 18 May 2023, Woodside emailed Nanda and responded to their requests from the 19 April 2023 meeting:
  - Woodside thanked Nanda for the consultation meeting and their careful consideration of the matters presented.
  - Woodside acknowledged and respected that Nanda have interests in the EMBA and noted that Woodside want to ensure impacts are as minimal as reasonably practicable.
  - A high-level overview of presented topics was provided.
  - **(1)** 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 would be included in Environment Plans that will be submitted to NOPSEMA.
  - **(1)** Woodside provided responses to questions noted from the meeting that were not related to the proposed activity.
  - **(4)** Noted that during the meeting Nanda expressed a desire for ongoing engagement and partnership, Woodside noted acknowledged they are committed to ongoing consultation engagement beyond that required for the submission of Eps.
- On 21 July 2023 Woodside emailed Nanda NOPSEMA’s Consultation Guidelines, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also reiterated Woodside’s request that Nanda advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult.
- On 21 July 2023, Nanda sent an automatic email response with a return date of 31 July 2023, no further email correspondence has been received to date.
- **(4)** On 25 July 2023, Woodside emailed Nanda/YMAC Woodside’s planned Program of Ongoing Engagement with Traditional Custodians.
- On 14 September 2023, Woodside emailed Nanda advising of the planned start date for the activity, and once again requesting if Nanda was aware of any other people with whom Woodside should consult, and if there was any information Nanda wish to provide on cultural values The email requested that information be distributed to members or individuals who may be interested. It requested this information prior to 28 September 2023. It also asked Nanda to provide the Consultation Fact Sheets and Summary Information Sheets (Appendix F, reference 5.66) to members or individuals who may be interested. No response was received to this email.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) During face-to-face engagements related to this activity and others, Nanda requested further information on topics related to this proposed activity which was responded to during the meeting and in correspondence shortly afterwards:</p> <ul style="list-style-type: none"> <li>• Decommissioning.</li> <li>• Hydrocarbon spill response, potential shoreline impact and emergency planning.</li> <li>• Impacts to whales.</li> <li>• Spill response arrangements.</li> </ul>	<p>(1) Woodside responded to Nanda’s requests for further information during face-to-face engagements in which they were raised, and no further information was requested on these topics.</p> <p>(2) Woodside noted Nanda’s interest in whales</p> <p>(3) Woodside accepted the budget for the 19 April 2023 meeting and on a request for environmental expertise said they fund other requests on a case-by-case basis. Woodside provided the names of organisations Nanda may wish to consider for environmental expertise. No further request for funding has been received by Woodside.</p>	<p>(1) Existing controls considered sufficient, as described in Section 6.</p> <p>(2) Woodside updated Section 4.9 to reflect Nanda’s interests and potential cultural values, including whales, and assessed potential impact on these, including controls, in section 6.10.</p> <p>(3) Not required</p> <p>(4) Woodside is implementing a program to actively support Traditional Custodians’ capacity for ongoing engagement and consultation on environment plans referenced as <b>PS 16.2.1</b> in this EP.</p>

<ul style="list-style-type: none"> <li>• Whether all infrastructure is eventually removed at decommissioning.</li> <li>• Cyclone resistant.</li> <li>• Water quality monitoring</li> <li>• Greenhouse emission.</li> <li>• Asked about the trunkline route and risk of gas leak.</li> </ul> <p>(2) Nanda expressed a general interest in whales. Woodside discussed control measures to protect migratory whales from an ecological perspective during the meeting in which the issue was raised. No further feedback or comment was received on this topic.</p> <p>(3) Nanda requested funding for meetings and to fund an expert environmental scientist.</p> <p>(4) Nanda have expressed interest in ongoing engagement and capacity building and investment opportunities.</p>	<p>(4) Woodside has assessed the Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with Nanda and address appropriate support for resourcing, separate from consultation under Reg 11A, Sufficient information to allow informed assessment has already been provided by other means, including Consultation Information Sheets and a Summary Information Sheet developed by Indigenous staff members, and a face to face meeting on 19 April 2023 for which Woodside met Nanda's costs, with appropriate material (pictures, maps, videos) and project attendance allowing opportunity to ask questions and seek further understanding.</p> <p>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 7.15).</p>	
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**Native Title Representative Bodies**

***Yamatji Marlpa Aboriginal Corporation (YMAC)***

YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate representing the cultural rights of a Traditional Custodian Community but exist to assist native title claimants and holders

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with YMAC for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. YMAC has indicated that it will not provide substantive comment on EPs.

Sufficient Information:

- Woodside sought direction on YMAC's preferred method of consultation. This resulted in meetings being coordinated at location of YMAC's choosing, with YMAC nominated representatives. These meetings included Woodside presenting information in a format and style that was readily accessible and appropriate
- Provided Consultation Information Sheet and Consultation Summary Sheets developed by Indigenous staff to YMAC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.

Reasonable Period:

- Consultation Information Sheet publicly available on the Woodside website since July 2021, further updated and available from January 2023.
- Woodside published advertisements in a national, state, and relevant local newspapers in October 2022 and then again 18 and 20 January 2023 advising of the proposed activities and requesting comments or feedback
- Consultation information provided to YMAC on 20 January 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to YMAC over a 12-month period, demonstrating a "reasonable period" of consultation.

Woodside asked YMAC if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside has provided a reasonable opportunity for input since July 2022 and a genuine two-way dialogue has occurred.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on YMAC functions, interests or activities.

**Summary of information provided and record of consultation:**

Historical Engagement

- 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 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 note that YMAC has 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 followed up via email.
- (1) On 19 July 2022, YMAC emailed Woodside stating the area Woodside has identified requires correspondence directed to Murujuga Aboriginal Corporation and Ngarluma Aboriginal 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.
- 19 April 2023, Woodside emailed YMAC, providing a link to a page on Woodside's management of emissions associated with the Scarborough Project and provided a list of consultants who may be able to assist PBCs with consultation. Woodside also offered to meet in the second week of May. No response was received.
- YMAC is the representative for NTGAC and Nanda Aboriginal Corporation and was the representative for Yinggarda Aboriginal Corporation until April 2023.
- On 12 June 2023, YMAC emailed Woodside on behalf of itself and its clients. The email attached:
  - A proposal to fund in-house expertise to support consultations and administration of the consultation framework.
  - A draft consultation framework.
- On 12 June 2023, Woodside responded to YMAC by email, thanking them for the documents and that Woodside would respond shortly.
- On 25 July 2023, Woodside emailed YMAC:
  - Agreeing in principle to the draft consultation framework and funding proposal but seeking further discussion on details.
  - Stating that Woodside is open to considering an industry funded position at YMAC to support the work they are facilitating.
  - attaching Woodside's Program for Ongoing Engagement with Traditional Custodians.
  - Seeking a meeting with YMAC in relation to the draft consultation framework at YMAC's earliest convenience.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
(1) 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. (2) YMAC has provided feedback that in its view it is a 'relevant	(1) Woodside agrees with YMAC's advice that MAC and NAC should be consulted regarding the activity, and they have been (2) Woodside notes YMAC's position that it does not intend to provide substantive comment on EPs (3) Woodside has assessed the Program of Ongoing Engagement with Traditional Custodians will support ongoing consultation with YMAC and/or the groups it represents. This can address appropriate support for	(1) Not required (2) Not required (3) Woodside will implement a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as <b>PS 16.2.1</b> in this EP.

<p>person' under sub regulation 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.</p> <p>(3) YMAC has provided feedback that it is seeking an industry funded position to support consultations for this and other activities, and has provided a draft consultation framework to assist the consultation process.</p>	<p>resourcing, separate from consultation under Reg 11A, Sufficient information to allow informed assessment has already been provided by other means.</p> <p>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 7.15).</p>	
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**Kimberley Land Council (KLC)**

The KLC was formed in 1978 by Kimberley Aboriginal people as a political land rights organisation and are now the peak Indigenous body in the Kimberley region working with Aboriginal people to secure native title, conduct conservation and land management activities and develop cultural business enterprises.

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below. KLC has stated that they do not wish to be consulted on EPs.

Sufficient information

- Woodside sought direction on KLC's preferred method of consultation.
- Provided Consultation Information Sheet and Consultation Summary Sheets developed by Indigenous staff to KLC. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
- Articulated planned and unplanned environmental risks and impacts, with proposed controls.
- Confirmed the purpose of consultation and set out in detail what is being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan
- Provided response to questions asked about the activity through consultation. Through these questions, KLC have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project.

- Advised that YMAC can request that particular information provided in the consultation not be published (to align with 11A(2)(4))

#### Reasonable period

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to KLC on 16 February 2023 and 23 March 2023 based on their function, interest, and activities.
- Woodside has addressed and responded to KLC over a 8-month period.

#### Summary of information provided and record of consultation:

- On 1 February Woodside spoke to KLC by phone to discuss upcoming EP consultations in the KLC region and the best way to consult. KLC stated that:
  - It was an inappropriate time of year for consultation due to law.
  - Stressed that the area had been badly impacted by floods.
  - They were not in a position to undertake consultation itself due to the above commitments.
  - **(1)** They had not formed a view on what the EP consultation itself means for Traditional Custodians and would not be participating in consultation itself.
  - They could assist provide information to Traditional Custodians and could assist with logistics if needed.
  - Requested a forward plan of EPs on which Woodside was seeking to engage.
- On 16 February 2023, Woodside emailed KLC with the EP Summary Information Sheet and a list of PBCs that appeared to relevant for the activity with whom Woodside had already commenced engagement. The email attached further information about upcoming EPs.
- On 23 February 2023, Woodside emailed KLC about activities not related to this activity but again attached the Summary Information Sheet for this EP.
- **(2)** On 28 March 2023, Woodside and KLC met by Teams and discussed the EP consultations generally. KLC stated that they were looking to be involved in spill response and support for regional ranger groups.
- On 20 April 2023, Woodside and KLC met in Perth to discuss ranger program spill responses and the appropriate timing for EP community information sessions.
- **(2)** On 20 April 2023, Woodside texted KLC to advise on progress within Woodside for exploring oil spill response training for rangers with AMOSC.
- On 21 April 2023, KLC texted Woodside thanking them for the 20 April meeting.
- **(2)** On 26 April 2023, Woodside texted KLC about other industry interest in spill response training for rangers.
- **(2)** On 11 May 2023, Woodside spoke with KLC to discuss a workshop for spill response training for rangers that would include other industry members and Traditional Custodian groups. KLC stated they were very interested in this and would test with relevant groups to see availability.
- **(2)** On 19 May 2023, Woodside texted KLC asking where they would prefer the workshop (Kimberley or Perth) to explore the oil spill response ranger models.
- On 8 June 2023, Woodside emailed KLC to extend an invite to the Broome community drop-in session.
- On 19 June 2023, Woodside spoke to KLC to follow up on attendees for the workshop. KLC stated they were still trying to lock down particular groups.
- **(2)** On 23 June 2023, Woodside spoke to KLC at the NOPSEMA Summit. KLC confirmed they were still interested in the ranger workshop but would be unavailable for a couple of weeks.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) The KLC has stated they do not want to be consulted but will facilitate consultations with relevant PBCs.</p> <p>(2) The KLC has stated they are seeking support for regional ranger programs and oil spill response training.</p>	<p>(1) Woodside has consulted with KLC in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation. KLC informed Woodside that it does not intend to provide comment on EPs</p> <p>(2) Woodside has ongoing engagement with KLC to explore models for ranger spill response.</p> <p>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 <b>Section 7.15</b>).</p>	<p>(1) Not required</p> <p>(2) Woodside will implement a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values, referenced as <b>PS 16.2.1</b> in this EP.</p>

### Self-identified First Nations Groups

#### ***Ngarluma Yindjibarndi Foundation Ltd (NYFL)***

NYFL was created to act as Trustee for the Trust under the Northwest Shelf Agreement 1998 struck between the Ngarluma and Yindjibarndi registered native title claimants, the NWS JVs and Woodside, prior to the resolution of the Ngarluma and Yindjibarndi native title claim. Its purpose is to carry on the business of enterprise development, investment and social welfare.

In 1999 the Ngarluma and Yindjibarndi native title claim was settled with the Federal Court appointing, at the request of the common law native title holders, the Ngarluma Aboriginal Corporation (NAC) as PBC to represent the communal interests of the Ngarluma people and the Yindjibarndi Aboriginal Corporation (YAC) as PBC to represent the communal interests of the Yindjibarndi people. Woodside consulted both NAC and YAC as relevant persons in the course of preparing this EP.

NYFL self-identified and has advised it is relevant for this EP.

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with NYFL for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

- Sufficient Information:
  - Sought direction on NYFL's preferred method of consultation. NYFL requested consultation material suitable for Traditional Custodian audience, which was developed and provided. NYFL and Woodside initially agreed to hold a face-to-face consultation meeting at location of NYFL's choosing with NYFL nominated representatives, however NYFL chose to postpone the engagement for an undefined time.
  - Provided Consultation Information Sheet and Consultation Summary Sheets developed by Indigenous staff to NYFL. These set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity with controls in a digestible, plain English format
  - Articulated planned and unplanned environmental risks and impacts, with proposed controls.

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Uncontrolled when printed. Refer to electronic version for most up to date information.

- Confirmed purpose of consultation and set out in detail what is being sought through consultation.
- Asked for the consultation and information sheets to be distributed to members and individuals.
- Woodside has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans" and Guideline "Guideline: Consultation in the course of preparing an environment plan"
- Reasonable Period:
  - Woodside published advertisements in a national, state, and relevant local newspapers including The Australian, The West Australian, Pilbara News (October 2022 and January 2023), Midwest Times, North West Telegraph and Geraldton Guardian (January 2023) advising of the proposed activities and requesting comments or feedback.
  - Met with NYFL and described the activity in detail in September 2022
  - Consultation information provided to NYFL on 27 January 2023 based on their function, interest, and activities.
  - Woodside has addressed and responded to NYFL over 12 months, demonstrating a "reasonable period" of consultation.

Woodside asked NYFL if it was aware of any other Traditional Custodian groups or individuals with whom Woodside should consult. None were identified.

Woodside engages in ongoing consultation, beyond that required by Regulation 11A, 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 7.15 of the EP).

Woodside considers the measures and controls described in this EP address the potential impact from the proposed activity on NYFL functions, interests, or activities.

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below.

**Summary of information provided and record of consultation:**

- On 31 August 2021, Woodside emailed NYFL as a member of the Quarterly Heritage Group advising of its plan to submit an Environment Plan (EP) to undertake seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development. The email attached a notice advising of the activities planned under the EP and the operational areas. The email requested feedback to Woodside in relation to the activities.
- 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 27 September NYFL emailed Woodside to schedule a meeting in Roebourne on Friday 30 September.
- On 30 September 2022 representatives of Woodside and NYFL met talked through the activities in the EP in detail. NYFL explained that the current information sheets were difficult to understand. Woodside undertook to provide materials in plain English that were being developed.
- 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.



- **(1)** NYFL also thanked Woodside for communicating to the business that NYFL is a 'relevant person' for activity.

- Between October 2022 and March 2023, while Woodside and NYFL have weekly communications on other matters, there was a hiatus on communication due changes to activity scheduling and description of the EMBA.
- On 30 November 2022, Woodside and NYFL held the Woodside NYFL NWS quarterly relationship meeting which is resourced by Woodside to enable meaningful participation by Traditional Custodians. There was a separate discussion about holding a separate meeting for EPs generally.
- **(2)** On 14 February 2023, NYFL emailed Woodside to see if the accessible information for Traditional Custodians had been prepared.
- On 1 March 2023, Woodside and NYFL held the Woodside NYFL NWS quarterly relationship meeting which is resourced by Woodside to enable meaningful participation by Traditional Custodians. The meeting discussed Woodside and NYFL reviewing the NWS 1998 Agreement for renegotiation. There was a separate discussion about holding a separate meeting for EPs generally.
- On 20 March 2023, Woodside emailed NYFL about the activity providing further information (Appendix F, reference 1.210), and provided a simplified Summary Information Sheet (developed with a Ngarluma Traditional Custodian for a Traditional Custodian audience) and including a link to the detailed information sheet on Woodside's website. The timeframes for consultation had been significantly extended.
- On 20 March 2023, NYFL emailed Woodside thanking them for the information and stating they would discuss the information with the Board and members.
- On 20 March 2023, Woodside emailed NYFL offering a meeting to present to the Board in relation to this activity and other activities.
- On 22 May 2023, Woodside emailed NYFL information in relation to an EP not related to this activity.
- **(2)** On 22 May 2023, the NYFL CEO replied saying that they were requesting information in an appropriate format for Traditional Custodians and saying that the language and approach was not appropriate for NYFL's members.
- On 24 May 2023, in response to the email on 22 May 2023, Woodside spoke to NYFL by phone, explained that the information sheets were developed with a Ngarluma Traditional Custodian but that the best way to understand the materials was to take Woodside up on our offer to present to NYFL. These presentations include images and the subject matter experts are on hand to answer questions. Presentations had been well received by other groups. Woodside had budget for consultation meetings and could provide support for the meetings to occur.
- On 8 June 2023, NYFL emailed Woodside about several matters including a request for "further information/culturally appropriate comms" for this activity.
- On 8 June 2023, Woodside reconfirmed previous offers to meet with NYFL in relation to the activity and other activities unrelated to this EP for the purpose face to face and consultation. Explained that these presentations have been well received from groups. Explained also that the summary information sheets provided were developed by Indigenous representatives for a Traditional Owner audience. Requested that if face to face consultation was not preferred by NYFL, whether they could provide some direction as to alternatives. Woodside reiterated they cover consultation costs to and can meet in Roebourne, assuming that is preferred.
- On 28 June 2023, Woodside emailed NYFL confirming a consultation date of 20 July and requesting NYFL send through a quote for costs.
- On 28 June 2023, NYFL responded saying they would hold off on committing to a date while they had a change to digest the outcomes of the NOPSEMA Summit.
- On 29 June 2023, Woodside emailed NYFL in relation to an activity unrelated to this activity and asking whether they wished to be consulted.
- **(3)** On 29 June 2023, NYFL responded stating that they were waiting to agree to national framework for consultation between industry and First Nations to be resolved before they consult on Environment Plans. This email was referring to the NOPSEMA Summit.
- On 10 July 2023, Woodside emailed NYFL seeking clarity in relation to their request. Woodside stated they understood the outcomes of the NOPSEMA Summit were as recorded by the facilitator and communicated to all participants as:
  - It was agreed that:

- There is a need for a National Summit of Indigenous Groups and Traditional Owners to consult together and agree what they require and what their collective and individual concerns may be.
  - Government (DISR) will assist by mapping and compiling a list of all traditional owner groups that should be invited to this Summit,
  - Kimberley Land Council and other PBCs will form a Steering Committee to draft the agenda for this Summit,
  - APPEA will seek membership approval to facilitate by funding this Summit, and
  - The Summit will be independently facilitated.
  - APPEA to further consult with their members in order to get some agreement on priorities and next steps for Industry.
  - After the National Summit of Indigenous Groups, the first of several meetings will be held between a smaller representative Traditional Owners group and a smaller representative Industry group, the latter to be coordinated through APPEA; and
  - There will be ongoing parallel consultations in relation to current EPs, which will continue in accordance with what is required by Reg 11(A)(1)(d) of the OPGGSA Environment Regulations.
  - Woodside stated it is committed to supporting the National Summit of Traditional Owners and is committed to industry and Traditional Owners working together to agree consultation frameworks. Woodside noted, however, this will take time and necessarily must occur in parallel to ongoing consultation, with operators obliged to consult pursuant to Reg 11(A). Woodside also stated they were committing to a program of ongoing consultation for the life of the EP that would be happy to discuss that with NYFL.
- **(3)** On 10 July 2023, NYFL stated that they did not agree with the facilitators record of the NOPSEMA Summit, particularly that there will be parallel ongoing consultation in relation to current EPs prior to the proposed National Summit of Indigenous Groups and Traditional Owners.
  - On 19 July 2023, Woodside emailed NYFL NOPSEMA's Consultation Guideline, Consultation Brochure, and Draft Policy for Managing Gender-Restricted Information. This email also requested that NYFL advise Woodside of any other Traditional Custodian groups or individuals with whom Woodside should consult. No response was received to this email
  - On 26 July 2023, Woodside emailed NYFL Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
  - On 26 July 2023, NYFL emailed Woodside in response to Woodside's planned Program of Ongoing Engagement with Traditional Custodians, noting it was a good start particularly with the inclusion of Traditional Owner feedback and indicating that assistance with resourcing and internal capacity would be required..
  - On 2 August 2023, Woodside emailed NYFL regarding the acceptance of a different Scarborough EP with the same EMBA, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether NYFL is aware of any people, who in accordance with Indigenous tradition, may have spiritual or cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information. The email also contained links to information on NOPSEMA's publications on EP consultation and its purpose. It also made clear that any gender restricted, or culturally sensitive information would be managed carefully and appropriately. An offer of support to participate in consultation was made.
  - On 4 August 2023, NYFL emailed Woodside regarding notification about acceptance of another Scarborough EP stating that they do not have sufficient resourcing to respond to EP matters. Requesting to meet to discuss a way forward.
  - On 11 August NYFL emailed Woodside primarily in response to another matter. The email noted that :
    - NYFL look forward to progressing discussion with Woodside on the proposed program of consultation.
    - **(4)** NYFL is participating with other First Nations organisations and representative bodies to develop a framework for consultation.
    - **(5)** There may be people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the EMBA that have not yet been afforded the opportunity to provide information
    - **(6)** There may be additional cultural or environmental values that relate to the area that have not been identified or communicated to Woodside
  - On 15 August 2023, Woodside emailed NYFL thanking them for their correspondence and requesting availability to meet.

- On 18 August 2023, NYFL emailed Woodside proposing a date of 30 August to meet to discuss next steps.
- On 18 August 2023, Woodside emailed NYFL accepting the proposed date to meet to discuss engagement processes.
- On 28 August 2023, Woodside emailed NYFL requesting a video link for a consultant to Woodside who will be involved in consultation and engagement going forward.
- On 28 August 2023, NYFL emailed through an agenda for the proposed meeting.
- On 28 August 2023, Woodside emailed NYFL acknowledging receipt of agenda and providing contact details for engagement.
- On 30 August 2023, Woodside met with NYFL to discuss a consultation process and engagement with NYFL and YAC, NYFL put forward the following:
  - (7) NYFL requested Woodside employ 3 traditional Owners who would engage/consult with NYFL members.
  - (8) NYFL stated that time frames must be longer than one month for consultation.
- On 14 September 2023, Woodside emailed NYFL advising of the planned start date for the activity, and once again requesting if NYFL is aware of any other people with whom Woodside should consult, and if there is any information NYFL wish to provide on cultural values. The email requested this information prior to 02 October 2023, but reiterated that Woodside will take feedback after the commencement of the activity as part of ongoing consultation. The Summary Information Sheet for this activity was attached (Appendix F, reference 5.64). No response was received to this email.

NYFL is also consulted through its membership on the Karratha Community Liaison Group (KCLG) and the Quarterly Heritage Group

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<ul style="list-style-type: none"> <li>- NYFL self-identified and advised Woodside that they are a relevant person for this activity. Their feedback included a request for information sheets appropriate for a Traditional Custodian audience.</li> <li>- NYFL requested consultation material suitable to a Traditional Custodian audience.</li> <li>- NYFL wishes to pause consultation until after the First Nations national summit is held</li> </ul>	<p>(1) Woodside has responded to NYFL's self-identification and consulted with them as a relevant person. NYFL was created to act as Trustee for the Northwest Shelf Agreement 1998. NYFL's membership is made up of Ngarluma people and Yindjibarndi people, membership is not open to any person who is not accepted as Ngarluma or Yindjibarndi. Woodside has also consulted with Ngarluma and Yindjibarndi Aboriginal Corporations individually. Ngarluma and Yindjibarndi Aboriginal Corporations were appointed by the Federal Court, at the request of the Ngarluma and Yindjibarndi common law native title holders as PBCs to represent the communal interests of the Ngarluma and Yindjibarndi people respectively. Ngarluma and Yindjibarndi Aboriginal Corporations are representative of all Ngarluma and Yindjibarndi people regardless of membership.</p> <p>(2) Woodside recognises that sufficient information must be provided in a form that is accessible and appropriate to the</p>	<p>(1) NYFL has been consulted with in accordance with the methodology described in Section 5 of the EP</p> <p>(2) Not required</p> <p>(3) Not required</p> <p>(4) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans, referenced as PS 16.2.1 in this EP. This includes continued engagement regarding NYFL's proposed Framework Agreement which would be applied to ongoing consultation for this activity. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix L</p> <p>(5) Methodology described in Section 5 adequately addresses this claim</p> <p>(6) Description of cultural values and heritage features is included in Section 4.9 of the EP</p> <p>(7) The proposed Framework Agreement (see point 4) will address appropriate NYFL resourcing. This is described</p>

<p>and a framework for consultation developed. Woodside understands that the First Nations national summit was tentatively scheduled for the end of August 2023, but may now take place in November 2023.</p> <ul style="list-style-type: none"> <li>- NYFL is working with other First Nations Organisations and representative Bodies to develop a framework for consultation. This has not yet been proposed to Woodside.</li> <li>- NYFL expressed that there may be people who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected who have not yet been afforded the opportunity to provide information.</li> <li>- NYFL expressed that there may be additional cultural and environmental values that relate to the area that have not been communicated to Woodside.</li> <li>- NYFL requested that Woodside employ three</li> </ul>	<p>audience. In response to this request, Woodside developed and provided Summary information sheets developed with a Ngarluma Traditional Custodian for a Traditional Custodian audience. Woodside offered face to face consultation meetings resourced by Woodside to enable meaningful Traditional Custodian consultation, which include visual aids and videos. NYFL was initially amenable to this, however later postponed the engagement for an undetermined period (see claim 7)</p> <p>(3) Woodside does not consider that the proposal that consultation be paused until the proposed First Nations National Summit is reasonable. Woodside does not consider that the First Nations Summit is a pre-requisite for consultation to occur under regulation 11A, and such a reading would be against case law guidance that the process of consultation must be capable of reasonable and practicable discharge. Sufficient information and a reasonable period has already been provided prior to the Summit.</p> <p>(4) Separate from consultation under Reg 11A, Woodside is open to engaging with a joint First Nations framework for consultation, however, notes that this is not required to undertake and/or complete consultation in the course of preparing this EP. The framework could be used to frame ongoing consultation. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff. Woodside has an existing engagement framework in place with NYFL via the Quarterly Heritage Group which enables regular communication about Woodside activities.</p> <p>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</p>	<p>further in the Program of Ongoing Engagement with Traditional Custodians, Appendix L</p> <p>(8) Not required</p>
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<p>Ngarluma/Yindjibarndi Traditional Owners who would consult with NYFL members.</p> <p>- NYFL stated that time frames must be longer than one month for consultation.</p>	<p>Management of Change and Revision process (see <b>Section 7.15</b>).</p> <p>(5) As described in Section 5.9.2 of the EP, Woodside's consultation methodology provided Traditional Custodians with the opportunity to be aware of the proposed activity and to participate in consultation. Woodside considers this methodology has afforded all people whose spiritual connection to the environment that may be affected a reasonable opportunity to consult. Consultation with NYFL has not identified any other groups or individuals relevant to communally held functions, activities or interests. NYFL have been provided with reasonable time to respond with this information since the email from Woodside of 18 July specifically requesting this information, but no response to this request has been received.</p> <p>Woodside has also consulted with Ngarluma and Yindjibarndi Aboriginal Corporations who are the Representative Aboriginal Corporations nominated by the Ngarluma and Yindjibarndi people respectively to represent the communally held interests of the Ngarluma and Yindjibarndi people.</p> <p>(6) Woodside has a robust understanding of the environment, cultural values and heritage features based on publicly available information and consultation with relevant persons. This is described in Section 4.9 of the EP</p> <p>(7) Woodside does not consider NYFL's request that Woodside employ three Ngarluma/Yindjibarndi traditional owners to consult with NYFL members a reasonable proposal or a necessary step to allow consultation to occur. Woodside notes that consultation must be capable of reasonable and practicable discharge. Woodside's consultation efforts are informed and undertaken by personnel with significant experience in First Nations relations, including Indigenous employees. Woodside assesses that the proposed</p>	
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	<p>Framework Agreement would be an effective mechanism to address resourcing for ongoing consultation.</p> <p>(8) Woodside has already provided NYFL with reasonable period of time to participate in consultation (as required by regulation 11A) and has been engaging since September 2022.</p>	
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**Historical cultural heritage groups or organisations**

***Western Australian Museum (WAM)***

Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to WA Museum on 1 February 2023 based on their function, interest, and activities.
- Woodside addressed and responded to WA Museum over a 6 month period.

**Summary of information provided and record of consultation:**

- On 1 February 2023, Woodside emailed the WAM advising of the proposed activity (Appendix F, reference 4.26) and provided an updated Consultation Information Sheet and State Shipwrecks information (Appendix F, reference 4.27).
- On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.32).
- 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.dceew.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 8 May 2023, Woodside responded to points raised in WAM's correspondence.
  - The Scarborough Trunkline is intended to be installed alongside the existing Pluto gas trunkline. The Trunkline route has been assessed for UCH including through multibeam echo sounder and side scan sonar. Assessments considered submerged Indigenous UCH as well as the existence of historic or maritime heritage. No UCH was identified through these assessments.
  - Dedicated surveys have been carried out along the Scarborough Trunkline route. These are sufficient for identifying large scale UCH and have been fully analysed and interpreted by an expert underwater archaeologist.
  - The SITI EP (current revision under assessment, not yet publicly available) will contain an Environmental Performance Objective to 'Minimise direct and indirect impacts to social, cultural, heritage and archaeological values within and surrounding the Operational Area'. It is intended that there will be a commitment that a Heritage Management Committee will be established to assess new information from further archaeological or ethnographic studies with regards to Indigenous UCH relevant to Murujuga Aboriginal Corporation. Woodside has also consulted broadly with other Indigenous representative organisations on this activity including on heritage management.
- On 25 July 2023, Woodside emailed WAM stating that Woodside originally responded to WAM on 8 May 2023 with regards to the WAM correspondence, however changes have since been made to the SITI EP as it progresses through the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) assessment process, that are relevant to the original WAM claims.
  - The SITI EP has been updated to include controls around the Unexpected Finds Procedure and risks to UCH.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>WAM has provided feedback regarding:</p> <ul style="list-style-type: none"> <li>• Its concerns about unlocated underwater cultural heritage (UCH),</li> <li>• A lack of desktop or physical assessment for UCH undertaken to make a UCH impact assessment,</li> <li>• Its recommendation for a UCH survey,</li> <li>• Advice to be provided to project managers, vessel, plant and ROV operators regarding visible or buried UCH and reporting requirements,</li> <li>• Procedures to be in place should any UCH be discovered, and</li> <li>• The inclusion of 'Impact to Underwater Cultural Heritage' as a Potential Impact / Risk as a result of seabed disturbance with risk mitigation and management measures.</li> </ul>	<p>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.</p> <p>Given the extensive surveys that have been carried out in and around the Operational Area, 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.</p> <p>Woodside added three new controls which address WAM concerns and notified WAM of these changes. These included an Unexpected Finds Procedure, vessel / ROV crew awareness of the procedure and obligations to stop work should any potential UCH be discovered, as well as the requirement to report UCH to relevant authorities, including to the WAM.</p> <p>Woodside responded to the DPLH's recommendation to notify WAM in the event of a maritime archaeological incident.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should further feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>As described in Section 4.9.1, Woodside has undertaken substantial assessments of the tangible and intangible heritage within the Operational Area. Woodside considers it adopts appropriate controls to manage underwater cultural heritage, as demonstrated in Section 6.7.2 and Section 6.7.3.</p> <p>Woodside and MAC have established the HMC described in <b>Section 7.5</b>. 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 and change management (<b>Section 7</b>).</p> <p>Woodside considers the measures and controls in the EP are appropriate, and new controls added to address WAM claims have been communicated to WAM.</p>
<b>Local government and community representative groups or organisations</b>		
<b>Shire of Ashburton</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> </ul>		



<ul style="list-style-type: none"> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Shire of Ashburton on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent follow up email(s) seeking feedback on the proposed activities.</li> <li>• Woodside has provided Shire of Ashburton with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed the Shire of Ashburton advising of the proposed activity (Appendix F, reference 4.13) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.22).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	No additional measures or controls are required.
<b>Town of Port Hedland</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided Town of Port Hedland on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has sent follow up email(s) seeking feedback on the proposed activities.</li> <li>• Woodside has provided Town of Port Hedland with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed the Town of Port Hedland advising of the proposed activity (Appendix F, reference 4.14) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.23).</li> </ul>		

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No further 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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Shire of Carnarvon</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Shire of Carnarvon on 27 January 2023 based on their function, interest, and activities.</li> <li>• Woodside has addressed and responded to Shire of Carnarvon over a 7 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed the Shire of Carnarvon advising of the proposed activity (Appendix F, reference 4.15) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.24).</li> <li>• On 3 May 2023, Woodside had a meeting with the Shire of Carnarvon on a separate EP and provided an overview of activities proposed under this EP. The Shire of Carnarvon:</li> </ul>		

- Noted that they were struggling to see how the Shire may be impacted by Woodside's activities that it has been receiving consultation information for. Noted that the Town of Coral Bay is within the Shire of Carnarvon which is closer to Woodside's activities, but this is still quite a distance.
- Noted that the townsite of Coral Bay may be more directly within Woodside's area of potential impact and is very reliant on the environment. Noted that there are fisheries based in Carnarvon going out to Shark Bay which are an important part of the economy and lifestyle.
- Woodside thanked the Shire of Carnarvon for its advice around engagement and agreed that the meeting was a good opportunity to establish a relationship with the Shire of Carnarvon and determine the best method to engage moving forward.
- Woodside explained recent changes to consultation and the expansive area titleholders are now required to consult on, referred to as the EMBA.
- Woodside explained that the EMBA for each EP is determined based on the largest spatial extent where unplanned events could potentially have an environmental consequence. Explained that for each of the EPs Woodside would be discussing with the SoC, the EMBA is determined by the unlikely event of a hydrocarbon release.
- Woodside explained that the Shire of Carnarvon has the opportunity to provide feedback on each of Woodside's proposed activities that it would be providing an overview of.
- Woodside provided an overview of the proposed activities, including planned and unplanned impacts. No feedback or queries were raised by the Shire of Carnarvon on the proposed activities.
- The Shire of Carnarvon advised it appreciated the overview of environment plans, including the activities proposed under this EP. The Shire requested Woodside send an email with the full list of EPs it had consulted the Shire on, so they had it in one place, including this EP.
- The Shire undertook to give the Council an update and if they have further input, they would reach out to Woodside.
- As part of broader discussions within the meeting, Woodside committed to providing the Shire with the contact points for Coral Bay for each of the environment plans discussed, including the activities proposed under this EP.
- On 5 May 2023, Woodside emailed the Shire of Carnarvon to thank the Shire for a meeting held on 3 May 2023. Woodside also resent consultation information previously sent to the Shire and invited feedback. Woodside reiterated a request regarding the likelihood of contact along Coral Bay for each of the EPs and that additional information would be sent to the Shire soon. Woodside stated it looked forward to developing a streamlined approach to consultation with the Shire.
- On 29 May 2023, the Shire of Carnarvon responded and thanked Woodside for providing the consultation information. The Shire advised it appreciated being kept informed and felt the meeting was useful in allowing the Shire to better understand the potential risks for areas within the Shire and the mitigations measures in place. The Shire requested that if risks to the Shire change for these projects or new risks emerge for these or other projects, it would appreciate being advised. The Shire had no further comment.
- On 29 May 2023, Woodside responded and thanked the Shire for its feedback with respect to a number of EPs, including the activities proposed under this EP and noted the Shire's advice that:
  - It would like to be updated if risks to the Shire change for these projects or new risks emerge for these or other projects.
  - The Shire has no further comments.
  - Noted that at the 3 May 2023 meeting, Woodside committed to providing the Shire with the likelihood of contact along Coral Bay for each of the above EPs. Woodside:
    - Explained the EMBA being determined by the highly unlikely event of a hydrocarbon release from activities within the scope of the EP.
    - Explained that when Woodside models the EMBA for a hydrocarbon spill, we consider both the environmental and visual amenity risk. The outputs identify which areas of the marine environment could be exposed to hydrocarbons at levels exceeding certain threshold concentrations in the unlikely event of a spill.

- Summarised the probabilities of surface, shoreline and in-water hydrocarbon contact at Coral Bay for a number of EPs, including the activities proposed under this EP.
- On 29 May 2023, the Shire of Carnarvon thanked Woodside for its previous correspondence and suggested Woodside brief its Local Emergency Management Committee (LEMC), via an online meeting if necessary, as most of this risk is only in the event of an emergency. A Shire representative was prompted to contact Woodside to arrange this meeting.
- On 8 June 2023, Woodside responded thanking the SoC for its email and confirmed Woodside would welcome the opportunity to brief the Shire’s LEMC.
- On 20 July 2023, Woodside followed up with SoC requesting to attend its Local Emergency Management Committee meeting.
- On 20 July 2023, SoC responded inviting Woodside to attend its next LEMC on August 16, 2023.
- On 21 July 2023, Woodside responded to SoC accepting the invitation to attend the committee meeting.
- On 16 August 2023, Woodside attended SoC LEMC meeting and provided:
  - An overview of proposed activities relevant to the Shire including this EP
  - Outlined consultation approach and explanation of Environment That May be Affected (EMBA) as a modelling process of the broadest extent a diesel could spread based on a number of conditions.
  - Detail of oil spill response approach in the highly unlikely event of a hydrocarbon spill
  - Woodside key steps when activating an oil spill response plan
- SoC thanked Woodside for presenting to the committee and no questions or concerns were raised.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>The Shire noted the Town of Coral Bay is closer to Woodside’s activities, but still quite a distance.</p> <p>Noted there are fisheries based out of Carnarvon going out to Shark Bay.</p> <p>Agreed the meeting was a good opportunity to establish a relationship and determine the best way forward.</p> <p>It appreciated the overview and requested a list of all EPs.</p> <p>The Shire undertook to give the Council an update and if they have further input, they would reach out to Woodside.</p> <p>At the request of the Shire, Woodside had a further meeting with the Shire’s</p>	<p>Woodside has addressed the Shire of Carnarvon’s feedback, including:</p> <ul style="list-style-type: none"> <li>• providing additional information on the proposed activities.</li> <li>• provided a consolidated email with all EPs Woodside was consulting the Shire on, including the activities proposed under this EP.</li> <li>• providing the Shire with the contact points to Coral Bay for each of the EPs, including the activities proposed under this EP.</li> <li>• meeting with the Shire’s LEMC to provide an oil spill response briefing.</li> </ul> <p>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</p>	<p>No additional measures or controls are required.</p>

<p>Local Emergency Management Committee to outline oil spill response approach. No questions or comments were raised.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>appropriate, Woodside will apply its Management of Change and Revision process (<b>see Section 7</b>).</p>	
<p><b>Karratha Community Liaison Group (KCLG)</b></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to KCLG on 31 August 2021 based on their function, interest, and activities.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has addressed and responded to KCLG over a 9 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 31 August 2021, Woodside emailed the Karratha Community Reference Group advising of the proposed activity (Appendix F, reference 1.18, 1.19, 1.20) and provided a Consultation Information Sheet. <ul style="list-style-type: none"> <li>- Feedback from the Pilbara Ports Authority has been received and addressed separately via direct consultation with Pilbara Ports Authority (see above in the Pilbara Ports Authority table entry).</li> <li>- No feedback received from other members.</li> </ul> </li> <li>• On 10 September 2021, Woodside presented to the KCLG on the broader Scarborough activities, including a status update on this EP.</li> <li>• On 18 March 2022, Woodside presented again to the KCLG on the broader Scarborough activities, including a status update on this EP.</li> <li>• On 27 January 2023, Woodside emailed the KCLG advising of the proposed activity, (Appendix F, reference 4.12) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.16).</li> </ul>		
<p><b>Summary of Feedback, Objection or Claim</b></p>	<p><b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b></p>	<p><b>Environment Plan Controls</b></p>
<p>The Pilbara Port Authority has provided feedback separately on the proposed activity (see above). Consultation has also taken place directly with Ngarluma Yindjibarndi Foundation Ltd (NYFL) (see</p>	<p>Woodside has addressed feedback from the Pilbara Port Authority separately (see above).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside</p>	<p>No additional measures or controls are required.</p>

<p>Traditional Custodian section of this Table).</p> <p>No further feedback, objections or claims received despite follow up.</p>	<p>will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	
<p><b>Exmouth Community Reference Group (ECRG)</b></p>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to ECRG on 7 April 2022 based on their function, interest, and activities..</li> <li>• Woodside has sent follow up emails and given presentations seeking feedback on the proposed activities.</li> <li>• Woodside has addressed and responded to the ECRG over a 16 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 7 April 2022, Woodside presented to the ECRG and provided consultation information that relating to the broader Scarborough activities including the Operational Area of this proposed activity.</li> <li>• On 17 November 2022, Woodside presented to the ECRG on the broader Scarborough activities, including a status update on this EP.</li> <li>• On 1 February 2023, Woodside emailed the ECRG advising of the proposed activity (Appendix F, reference 4.19) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.17).</li> </ul>		
<p><b>Summary of Feedback, Objection or Claim</b></p>	<p><b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b></p>	<p><b>Environment Plan Controls</b></p>
<p>No feedback, objections or claims received despite follow up.</p>	<p>Woodside has provided relevant information to the ECRG representative's questions.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>No additional measures or controls are required.</p>

<b>Onslow Chamber of Commerce and Industry</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Onslow Chamber of Commerce and Industry on 27 January 2023 based on their function, interest, and activities..</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided Onslow Chamber of Commerce and Industry with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 27 January 2023, Woodside emailed the Onslow Chamber of Commerce and Industry advising of the proposed activity (Appendix F, reference 4.16) and provided an updated Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.25).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7.13</b> ).	No additional measures or controls are required.
<b>Carnarvon Chamber of Commerce and Industry</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Carnarvon Chamber of Commerce and Industry on 27 January 2023 based on their function, interest, and activities..</li> <li>• Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>• Woodside has provided Carnarvon Chamber of Commerce and Industry with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p>		

<ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed the Carnarvon Chamber of Commerce and Industry advising of the proposed activity (Appendix F, reference 4.18) and provided an updated Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.27).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Port Hedland Chamber of Commerce and Industry</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to Port Hedland Chamber of Commerce and Industry on 27 January 2023 based on their function, interest, and activities..</li> <li>Woodside has sent follow up emails seeking feedback on the proposed activities.</li> <li>Woodside has provided the Port Hedland Chamber of Commerce and Industry with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 27 January 2023, Woodside emailed the Port Hedland Chamber of Commerce and Industry advising of the proposed activity (Appendix F, reference 4.17) and provided an updated Consultation Information Sheet.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.26).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.





## Other non-government groups or organisations

### Conservation Council of WA (CCWA)

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Conservation Council of WA (CCWA) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to CCWA on 31 August 2021 based on their function, interest, and activities.
- Woodside addressed and responded to CCWA claims and objections over a 23 month period.

#### Summary of information provided and record of consultation:

- On 12 August 2021, CCWA emailed Woodside and requested to be consulted on Scarborough EPs.
- On 19 August 2021, Woodside emailed CCWA thanking them for their letter and saying the consultation team would be in touch about future EPs.
- On 31 August 2021 Woodside emailed CCWA advising of the proposed activity (Appendix F, reference 1.21) and provided a Consultation Information Sheet.
- On 15 December 2021, Woodside received third-party correspondence via NOPSEMA in relation to a related Scarborough activity. Following assessment of the feedback, Woodside determined that the feedback from CCWA had included the following feedback, claims and objections that could also be related to the proposed activity the subject of this EP. The feedback also included a number of additional third-party supporting documents:
  - CCWA asserted that impacts on the Dampier Archipelago National Heritage Place, from the development of the Scarborough gas field, need to be assessed in EPs for the Scarborough Project.
  - CCWA claimed that Woodside's consultation process has been restricted and consultation with a wider group of 'relevant' persons is required.
  - CCWA claimed the Scarborough Project has not been properly referred, assessed & approved under the EPBC Act, and noted potential impacts on World Heritage & National Heritage values of Great Barrier Reef.
  - CCWA claimed the information provided by Woodside to date does not meet consultation requirements as defined in the Regulations.
  - CCWA claimed that construction and operation of the pipeline is not an independent activity separate to the Project. Therefore, CCWA expects the impacts and risks (and necessary consultation) should not be narrowed to exclude key aspects of the Project.
  - CCWA requested further information about GHG emissions and potential climate change impacts and risks of the Project.
  - CCWA required further information on how the Project's exacerbation of climate change impacts and risks will be made acceptable and ALARP, including information relating to a number of possible 'control measures' for reducing the degree of environmental impact and risk associated with this EP and the broader Project.
  - CCWA claimed that information provided with respect to Paris Agreement alignment, warming and energy mix scenarios may be inaccurate. CCWA required further information on how the Project's climate change impacts and risks will be made acceptable and ALARP.

- CCWA claimed that emissions reductions arising from coal to LNG switching must be substantiated through credible and reliable evidence that displacement or substitution will or has actually occurred, with emissions reductions properly accounted for.
- CCWA also requested that Woodside provide information as to its consideration of certain options and control measures (i.e. no development, reduction of GHG emissions to Net Zero, selection criteria for LNG buyers).
- CCWA claimed that the cumulative effects from climate change on the ecological communities at risk have not been factored into the impact assessment.
- CCWA claimed that there are limitations in the Environmental Impact Assessment relating to the quality and availability of baseline information and suitability of management and monitoring plans. CCWA noted the proximity of dredging activities to nearby Marine Parks and claimed that the EP requires reappraisal to avoid ecological impacts from the project's construction activities in these areas.
- CCWA claimed that some modelling is based on data from habitats outside the actual impact zones, uses receptor species studies which are not specific to the areas under consideration, or studies that are uncertain in their results.
- CCWA claimed that the importance of epifauna and infauna to overall ecosystem health is downplayed and that sparseness or low species diversity of benthic communities in the spoils ground does not necessarily correspond to low environmental impact.
- CCWA claimed that Woodside have submitted an EP for an activity that is not included in the OPP.
- CCWA claimed that it had not been provided with a reasonable opportunity to be consulted on the EP.
- On 31 January 2022, the EDO emailed Woodside a letter on behalf of their client CCWA:
  - CCWA considers that Woodside's consultation to date had fallen short of that required regarding the activities the subject of this EP and that it did not meet the criteria as per the regulations.
  - CCWA claimed to have not received Woodside's email of 31 August 2021; to have not been provided reasonable opportunity for consultation and reiterated its relevant person status for this activity and other activities relating to the Project.
  - Further comments were regarding:
    - CCWA's expectation that the impacts and risks of Scarborough activities (and consultation) should not be unduly narrowed to exclude key aspects of the project and determination of control measures which may apply.
    - Indirect impacts – without addressing risks associated with the future of the reserve or indirect impacts, this EP does not fully address the environmental impacts and risks of the activity.
    - CCWA does not consider that the indirect impacts and risks of the activity in terms of climate change and degradation of rock art are properly addressed.
    - CCWA requires information about total acid gas and GHG emissions over the life of the project.
    - Inclusion of all activities in the OPP – CCWA is concerned that the OPP sets out a trunkline diameter which had been changed in the EP and require further information about the reason for the change, and how this will affect operations and impacts/risks of this change to the activity.
    - Sufficient information not provided on GHG emissions
    - Climate change impacts and risks – CCWA reiterates climate change impacts and cites various reports as evidence.
    - Further information was requested relating to GHG emissions, different project development options i.e. 'no development' and conditional sale of LNG.
  - CCWA presented next steps outlining expectation for EP consultation and recommendations for NOPSEMA.

- On 28 April 2022, Woodside responded to CCWA and attached a detailed table of responses to address specific claims and objections raised on the proposed activity in its letter to NOPSEMA, where appropriate:
  - Woodside advised that the Scarborough SITI EP assesses both direct and indirect environmental impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. 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 proposed PAP and will be evaluated in future Scarborough EPs as appropriate.
  - Woodside advised that consultation requirements set out in Reg 11A of the Environment Regulations have been complied with in relation to the consultation process for this EP.
  - Woodside advise that the Scarborough Offshore Project Proposal (Scarborough OPP) has been appropriately authorised under the EPBC Act through its acceptance by the NOPSEMA, in accordance with the OPGGS Endorsed Program Approval.
  - Woodside acknowledged that CCWA had self-identified as a relevant person and confirmed that Woodside has consulted with CCWA for this proposed activity.
  - Woodside advised that CCWA was consulted in relation to the Scarborough Offshore Project Proposal (OPP). The OPP evaluates the impacts and risks across the phases and activities of the Scarborough Project and demonstrates that they will be managed to an acceptable level. These impacts and risks will then be considered across subsequent EPs, where relevant to the scope of that Petroleum Activity. Each EP which covers a Petroleum Activities Program under the OPP, evaluates and addresses impacts and risks, appropriate to the nature and scale of the particular Petroleum Activities Program.
  - Woodside advise that the GHG emissions associated with the production, processing and consumption of Scarborough gas are not within the scope of the SCA SITI EP and will be addressed in future EPs, as appropriate. Woodside provided additional information contained in Section 6.7.5 of the EP regarding GHG emissions of the SITI activity, which summarises the estimated GHG emissions, considered indirect emissions of the proposed Petroleum Activity.
  - Woodside advised that Section 6.7.5 of this EP has been updated with additional control measures which have been developed since first submission of the EP and which aim to reduce the GHG emissions for the activity to ALARP.
  - Woodside referred CCWA to section 7.1.3 of the Scarborough OPP which includes an assessment of GHG emissions associated with the Scarborough Development over its lifetime. Woodside also advised CCWA that a number of greenhouse related development alternatives are considered in Section 4.5 of the OPP, including a no development option.
  - Woodside advised that Section 6 of this EP demonstrates the impacts and risks of the Petroleum Activity Program are ALARP and acceptable.
  - Woodside advised that to support the environmental impact assessment process for the Scarborough Project a suite of baseline studies were completed, in addition to a review of previous studies and available literature, as described in Section 5 of the OPP and Section 4 of this EP.
  - Woodside advised that Section 6.7.2, 6.7.3 and 6.8.6 of this EP set out the impact and risk assessment and relevant controls to manage potential impacts to benthic communities and habitats to ALARP and acceptable levels. The EP also sets out a number of Environment Performance Outcomes (EPOs) which set the level of performance for protecting water quality, the Dampier AMP Habitat protection zone, marine turtles and ecosystem function from trenching and dredging activities.
  - Woodside advised that regarding monitoring and management of the trenching and spoil disposal, and borrow ground dredging and backfill activities, Section 7.8 of the EP has been updated to include further details on the Tiered Monitoring and Management Framework (TMMF). The TMMF is a proactive and adaptive framework informed by water quality to manage the dredging activities within acceptable water quality boundaries, to avoid reversible impacts to coral communities as the most sensitive receptor in Zone A and B (in State waters) and sponges in the Offshore Zone.

- Woodside provided details regarding dredge plume modelling impact thresholds developed for the Scarborough project which are based on the latest contemporary scientific research from the Western Australian Marine Science Institute (WAMSI) Dredging Science Node, published in Jones et al (2019) and Pineda et al. (2017).
- Woodside referred CCWA to section 7.1.6 of the Scarborough OPP which provides a detailed assessment of both direct and indirect environmental impacts and risks to epifauna and infauna as a result of the seabed intervention and trunkline installation activities, including potential value of this habitat for fish and as foraging habitat for marine turtles. Woodside advised that Section 6.7.2 of this EP has been updated to reflect the additional value of epifauna and infauna as foraging habitat for marine turtles.
- Woodside clarified that an 'Activity' as defined by the regulations means a petroleum activity (operations or works in an offshore area for the purposes of exercising a right conferred). The activity in this context is the installation of the pipeline which was included in the OPP. The OPP is only required to provide general methods and equipment to be used to inform the evaluation of impacts and risks while the specific detail of the project activities will be required in the subsequent EP(s). The change does not introduce any new environmental risk / impacts or significantly alter the environment impacts / risks as described in the accepted Scarborough OPP.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>In the course of consultation on a separate Scarborough EP, CCWA provided feedback, objections and claims relating to:</p> <ul style="list-style-type: none"> <li>• Impacts on the Dampier Archipelago National Heritage Place</li> <li>• Consultation requirements under the Regulations</li> <li>• Referral process of the broader Scarborough Project</li> <li>• Impact and risk assessments, including cumulative impacts</li> <li>• Quality and availability of baseline information relating to the Environmental Impact Assessment, noting potential impacts to nearby Marine Parks</li> <li>• Appropriateness of modelling and interpretation in context of receptors</li> <li>• Impact on benthic communities</li> </ul>	<p>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.</p> <p>Woodside has provided responses to feedback received as shown above, including where amendments have been made to the EP in relation to any of the feedback, objections or claims raised.</p> <p>Since initial submission of the EP to NOPSEMA, updates have been made in the EP to address assessment outcomes. <b>Section 6.7.5</b> of this EP has been updated with additional control measures to better articulate the ALARP position.</p> <p><b>Sections 6.7.2, 6.7.3 and 6.8.6</b> of this EP set out the impact and risk assessment and relevant controls to manage potential impacts to benthic communities and habitats to ALARP and acceptable levels.</p> <p><b>Section 7.8</b> of the EP has been updated to include further details on the Tiered Monitoring and Management Framework (TMMF).</p> <p><b>Section 6.7.2</b> of this EP has been updated to reflect the additional value of epifauna and infauna as foraging habitat for marine turtles.</p>	<p>Woodside has consulted CCWA in the course of preparing this EP. Woodside has assessed the claims or objections raised by CCWA. No additional measures or controls have been put in place.</p> <p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on CCWA's functions, interests or activities.</p>

<ul style="list-style-type: none"> <li>• EP activity as described in the OPP.</li> </ul> <p>CCWA has requested additional information on:</p> <ul style="list-style-type: none"> <li>• Climate change impacts and risks and control measures for GHG reduction in alignment with the Paris Agreement.</li> </ul>	<p>No further feedback on the proposed activity has been received from CCWA following Woodside's correspondence on 28 April 2022.</p> <p>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 <b>Section 7</b>).</p>	
<p><b>Greenpeace (GAP)</b></p>		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Greenpeace Australia Pacific (GAP) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to GAP on 29 April 2022 based on their function, interest, and activities.</li> <li>• Woodside has addressed and responded to GAP over a 15 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 8 April 2022, during the course of preparing this EP, Woodside received an email from GAP who self-identified and requested to be consulted on this and other Woodside EPs. GAP also made requests for additional information relating to the proposed activity including:             <ul style="list-style-type: none"> <li>- A description of the EMBA in relation to the activities, and the potential environmental impacts and risks,</li> <li>- The potential impacts and risks on any species listed under the Environment Protection and Biodiversity Conservation Act 1999 (Cth), on the Ningaloo Reef Marine Park, the Montebello Marine Park, the Dampier Marine Park, and any other significant marine ecosystem,</li> <li>- The potential impacts and risks in relation to Sea Country and other areas of marine or terrestrial Aboriginal cultural significance and/or heritage,</li> <li>- The total GHGs associated with the activities and where these will occur, including any flaring/venting of greenhouse gas emissions both offshore and onshore,</li> <li>- The potential impacts and risks of GHGs in relation to global warming and climate change, including whether and how those emissions would fit within a carbon budget and emissions reduction scenarios aligned with the temperature goals of the Paris Agreement, and specifically whether the Project can be accommodated within a carbon budget for a 1.5 degree, 1.8 degree or 2 degree warming scenario,</li> <li>- The proposed GHG emissions control measures, including details of any proposed offsets and any proposal for carbon capture and storage.</li> <li>- The potential cumulative impacts of the above listed impacts or risks considered in the context of existing and proposed developments and/or activities in the vicinity of the area that may be affected by the activities and/or the Project,</li> </ul> </li> </ul>		

- The potential cumulative impacts of upstream and downstream activities associated with the Project as a whole, including transport of gas via undersea pipeline and onshore processing of gas.
- On 29 April 2022, Woodside provided a response to GAP which included advice that Woodside has determined there is no potential for the functions, interests or activities of GAP to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.
  - Woodside advised it will assess the self-identification by GAP and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared.
  - Woodside noted GAP's comments and request for further information relate to the broader Scarborough Development and that the information GAP requested, where relevant, is contained within the accepted Scarborough Development Offshore Project Proposal as well as the publicly available versions of the activity-specific EPs which are published on NOPSEMA's website.
  - Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 13 January 2022.
  - Woodside invited GAP to provide further feedback on the proposed activity.
- On 1 June 2022, Woodside met with GAP representatives to discuss Woodside's broader business, including the Scarborough development.
- On 15 June 2022, Woodside emailed GAP advising it has further reviewed GAP's letter from 7 April 2022 (emailed to Woodside on 8 April 2022) and considers that GAP is a relevant person under Regulation 11A of the OPGGS Regulations, for the purposes of consultation on this EP. Woodside provided a detailed statement of response to GAP's request for additional information. Woodside noted that similar information was also provided to CCWA as well as to NOPSEMA where relevant. Woodside's responses are summarised as follows:
  - The EMBA has been determined based on the extent and area of the worst-case loss of containment scenario for the activity. This scenario is a 2000 m3 marine diesel spill from a vessel collision resulting in the rupture of a fuel tank. 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.
  - Key impacts and risks are summarised in the consultation fact sheet available on the Woodside website. A full list of the environmental aspects which have been impact and risk assessed in the EP (Section 6) are provided in Table 1 (at the end of this correspondence).
  - Section 4.6 of the EP identifies protected species which occur within the Operational Area and/or EMBA. Potential impacts to these species are included in the impact assessment in Section 6 of the EP where relevant.
  - Regarding impacts to Sea Country, Woodside engaged submerged heritage experts to conduct a study in consultation with the Murujuga Aboriginal Corporation. The study concluded that the Scarborough pipeline route is likely to have "low to nil impacts" to Indigenous archaeological values across the project footprint in Commonwealth waters. The existence of any unknown Aboriginal sites or artefacts of significance within the offshore waters of WA is considered highly unlikely. Section 6.7.2 in the EP outlines impact potential for Cultural Heritage considerations from the worst case credible loss of containment scenario.
  - Regarding GHG emissions, this EP assesses both direct and indirect environmental impacts and risks associated with the proposed Petroleum Activities Program. The extraction of Scarborough gas for onshore processing is not included in the Petroleum Activities Program for this EP. Indirect impacts and risks arising from the onshore processing of Scarborough gas will be evaluated in Scarborough EPs as appropriate.
  - 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.

- Controls in the EP include but are not limited to: Marine Order 97 (Marine Pollution Prevention – Air Pollution); Vessel operations planned where practicable to minimise fuel consumption and associated GHG/air emissions; Project vessels will not use HFO or IFO; and DP Bulk Carriers (B-types) will predominantly be used for pipe supply to the PV. Woodside continuously seeks opportunities to improve energy efficiency and reduce GHG emissions. Section 6.6.5 of the EP (Rev 2) has been updated with additional control measures.
- While there may be spatial overlap with a number of pipelines and cables, activities on/around this infrastructure cannot occur concurrently and therefore, no cumulative risks or impacts will credibly occur.
- Regarding potential cumulative impacts of upstream and downstream activities, consideration of the Project and the cumulative assessment is detailed in the OPP Section 8. The cumulative impact assessment has shown that there is little cross-over in spatial extent of aspects, both within the project and between Scarborough and other activities/developments.
- Woodside concluded by pointing to various sections in the EP where more information can be found in regard to impacts and risks being reduced to ALARP, Environmental Performance Outcomes and the implementation strategy and monitoring, recording and reporting arrangements.
- On 29 June 2022, GAP provided a response to Woodside and the regulator that contained a number of claims /objections and requests for further information relating to the following topics (labelled as 'Grounds for refusal/amendment of the EP'):
  - The Proponent has not consulted with all relevant persons and incorporated their feedback into the Environment Plan
  - The Proponent has not adequately evaluated all impacts and risks
  - The Proponent should clarify to the regulator the depth of experience of the attendees at the Environmental Risk and Impact Identification workshop
  - The Proponent should thoroughly assess the backfill sourcing options
  - The risk analysis should be updated and reassessed based on more realistic impact durations
  - The proponent should include modelling to substantiate an assessment of potential long term impacts to AMP due to the altered sea floor in the Offshore Borrow Ground.
  - Greenpeace recommends that a full assessment be conducted to determine the degree to which dugongs and seagrass will be impacted
  - The Proponent should further assess impacts to benthic habitats and the fauna associated with them i.e. faunal communities currently using the neighbouring Pluto trunkline
  - The Proponent should adopt additional measures that will reduce light impacts from vessels and activities should not take place within the turtle BIAs during peak hatching periods
  - The Environment Plan is inconsistent with the Blue Whale Conservation Management Plan and threatened species recovery plans
  - The Proponent should provide evidence to demonstrate how the activity aligns with the Federal Government's emissions reductions commitments
  - The Proponent should provide accurate scope 1, 2 and 3 emissions estimates from the Scarborough Project and the proposed activity
  - Consistency with the principles of ecologically sustainable development, specifically the 'intergenerational principle'
  - The Proponent should re-evaluate air quality risks in regard to GHG emissions
  - Consideration of the direct, indirect and cumulative impacts of the activities including acoustic emissions should be given



- The Proponent should assess and report on potential cumulative impacts from all activities to be conducted at Scarborough site as a whole
- Activities described pose unacceptable risks to cetaceans, including threatened species like PBW
- The Proponent and the regulator should check the modelling completed for the trunkline EP for circular reasoning issues and correct as required and make other recommendations regarding noise and acoustic monitoring
- Greenpeace suggest using a more conservative estimate of noise levels likely to impact cetacean behaviours and the proponent provide evidence about likely masking impacts. Other noise recommendations are made relating to threshold exceedance, passive acoustic monitoring and displacement costs / impacts for cetaceans.
- The Proponent assesses impacts of FCGT discharge material on fish inhabiting the existing Pluto trunkline.
- Recommendations relating to unplanned hydrocarbon release (vessel collision) including recalculation of the EMBA, verification of the modelled weathering simulations, full assessment of impact potential to plankton, duration of spill and work near the turtle / whale BIAs should not be conducted during peak periods.
- All vessels servicing the project should be restricted to a maximum speed of 8kn (except in the event of an emergency).
- Dedicated MFO's and passive acoustic monitoring should be used for cetacean identification
- Regarding decommissioning, GAP recommends the current EP confirms that the trunkline and associated infrastructure will be removed and the likely process of decommissioning.
- Greenpeace recommends the proponent be required to conduct more frequent /thorough inspections of all infrastructure.
- On 30 August 2022, Woodside responded to GAP and attached a detailed table of responses to address specific claims and objections raised on the proposed activity, where appropriate. A summary of the table is as follows:
  - Consultation requirements set out in Reg 11A of the Environment Regulations have been complied with in relation to the consultation process for the SITI EP. Woodside has followed the requirements of subregulation 11A (1) of the Environment Regulations to identify relevant persons for the purposes of consultation on its EPs.
  - With respect to the ENVID, the participants at the Environmental Risk and Impact Identification workshop were from a multi-disciplinary background with a wealth of relevant knowledge and experience and included external environmental consultants supporting the EP development with extensive experience and understanding across all topics highlighted.
  - Regarding Offshore Borrow Ground dredging and backfill, Section 4.5.4.6 of the Scarborough OPP (SA0006AF0000002) provides an assessment of the various options for post lay stabilisation and protection and borrow ground location which considered the environment, economic and technical feasibility and safety aspects. The borrow ground is located in the offshore open ocean environment to the northeast of Legendre Island. Results from geotechnical studies over time suggest that the borrow ground area is a dynamic environment which experiences measurable sand movement, with sand waves up to 0.5 m with typical wave lengths of 5-10 m found in some areas. The dredging of sand from the borrow ground is not expected to result in deep depressions that would markedly change the hydrodynamics in this open ocean environment, and hence not affect the adjacent Dampier Marine Park.
  - Regarding environmental risk analysis and summary, Table 6-3 in the EP summarises the risk assessment outcomes from Section 6 and the ENVID.
  - In relation to the Petroleum Activities Program, impacts to significant seagrass communities and dugong foraging habitat are not anticipated Equally, impacts to fish assemblages are not expected as stated in Section 7.1.6.2 of the Scarborough OPP (SA0006AF0000002),

- Section 6.7.4 of the EP provides an assessment of vessel lighting on marine turtles including reference to light modelling. Impacts to hatchling emergence, including hatchling mis- or dis-orientation, are not predicted and highly unlikely. The desktop lighting assessments by PENV (2020a and 2022) concluded that the light emissions from vessel activities in the Trunkline and Borrow Ground Project Area would not have significant impact on marine turtles across the whole life cycle.
- The activities set out in the EP are not inconsistent with the Blue Whale Conservation Management Plan.
- In relation to GHG emissions - Section 6.7.5 of the SITI EP describes GHG emissions of the SITI activity. GHG emissions associated with the Petroleum Activities Program set out in the EP will not go beyond the 5 year life of the EP (expected to cease prior to the end of 2024) and are therefore aligned with Australia's emission reduction commitments. Section 6.7.5 of this EP has been updated to consider more recent climate change reports with updated projections of climate change, including the IPCC's Sixth Assessment Report (AR6), the CSIRO and Bureau of Meteorology's State of the Climate 2020 and the IEA's World Energy Outlook 2021.
- 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. 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 may be evaluated in future Scarborough EPs as appropriate. This EP assesses both direct and indirect environmental impacts and risks associated with the proposed Petroleum Activities Program that are appropriate to the nature and scale of the Petroleum Activities Program.
- The Intergenerational Principle, as part of Ecologically Sustainable Development, was part of the criteria for acceptability that the Scarborough project as a whole was assessed against in the OPP. As demonstrated in Section 7.1.3.9 of the OPP (SA0006AF0000002, Rev 5), the project is aligned with the principles of Ecologically Sustainable Development.
- Regarding activities posing unacceptable risks to cetaceans, all activities have been assessed in Section 6 of the EP and all risks to cetaceans have been reduced to ALARP and acceptable levels.
- Section 6.7.6 of this EP assesses potential impacts from acoustic emissions as a part of the Petroleum Activities Program as well as potential cumulative impacts. A comprehensive summary of the JASCO Animal Simulation Model Including Noise Exposure (JASMINE) which was used to predict the exposure of animals (pygmy blue whales) to sound arising from the vessel operations was provided and Woodside noted this was also added to the EP as Appendix K. Woodside noted the threshold level for behavioural responses in marine mammals from continuous noise sources (120 dB re 1 µPa SPL) is based on the best data available published in peer-reviewed literature, and represents a conservative, internationally accepted threshold. Section 6.9.3 of the EP demonstrates that the activity is not inconsistent with the Conservation Management Plan for the Blue Whale.
- Regarding masking impacts and communication interference in cetaceans, details were provided to demonstrate that for pygmy blue whales there is limited overlap in frequency range with the mid- and high-frequency acoustic emissions from vessels that will be utilised for the activity (broadband levels centred around 20 kHz) While for humpback whales, there is the possibility that acoustic emissions from the project vessels could contribute to masking of vocalisations during activities that overlap the migration BIA during migration periods however, given the very low overlap with the migration BIA and the short range from the vessels at which masking effects could occur (within hundreds of metres), significant masking impacts to humpback whale vocalizations are not likely to occur.
- The Demonstration of ALARP in Section 6.7.6 of the EP includes assessment of a number of approaches/technologies for detecting pygmy blue whales. The use of trained vessel crew as marine fauna observers on project vessels while operating in the pygmy blue whale migration BIA during migration periods, to watch for pygmy blue whales and record cetacean presence / activity was included. In addition, a number of adaptive management controls to minimize the likelihood of impacts to pygmy blue whales from underwater acoustic emissions have been identified in the EP (Section 6.7.6) and will be implemented during the activities.

- Regarding displacement costs and impacts for cetaceans, there are no data that indicates that the area of the pygmy blue whale migration BIA overlapped by the Operational Area for the activities represents an area where opportunistic foraging by pygmy blue whales occurs regularly. Hence, it is highly unlikely that the activity would displace pygmy blue whales from any critical habitat, such as a foraging location or resting area.
- In relation to FCGT impacts in the vicinity of the Pluto trunkline, the contingent FCGT discharge, at KP 33 has been removed from the EP due to progression in activity design. Alternative options are now available which do not result in any discharge to the marine environment.
- In relation to the EMBA and recalculation of worst-case scenarios; rationale for selection of credible loss of containment scenarios is provided in Section 6.8.2 of the EP. The worst-case hydrocarbon loss of containment scenarios are identified in accordance with appropriate guidance, including NOPSEMA information papers and AMSA publications. A range of information was considered, including the onboard fuel inventory for project vessels.
- Modelled weathering simulations have been provided in Section 6.8.2 of the EP to illustrate the potential behaviour of marine diesel when exposed to idealized (constant wind conditions) and representative (variable wind conditions) environmental conditions. Intent is to provide an understanding of the proportional fate of the hydrocarbon in the environment, while not representing the actual scenario.
- Regarding impacts to plankton following an unplanned hydrocarbon spill, Woodside noted the EMBA is a representation of the outputs from 200 simulations, under different wind and current conditions, to determine the widest extent of possible oil dispersion, at 3 locations, which in the event of an actual unplanned hydrocarbon release the area of exposure would be considerably smaller. It was noted that plankton in contact with the spill source at the time of release may be impacted, and there is potential for localised mortality. However, given hydrocarbon characteristics, expected rapid weathering and then degradation of the entrained component, and the relatively quick recovery times of plankton, unplanned marine diesel releases are not expected to have a substantial adverse effect on plankton life cycle and spatial distribution and potential impacts would be limited to slight.
- In response to the question of how long hydrocarbons remain above threshold levels; after an unplanned spill, how long surface, accumulated, entrained and dissolved hydrocarbons are expected to remain above threshold levels will be dependent on the individual simulations. Stochastic modelling is used to understand all the areas that could be affected by a potential hydrocarbon release, and it is further clarified in the EP that in the highly unlikely event of a release the potential area exposed to hydrocarbons is much smaller and only for a small period of time given the nature of marine diesel to evaporate and spread quickly. The 'Summary of Assessment Outcomes' is appropriate for the nature and scale of a diesel spill.
- Regarding GAP's seasonal restrictions to activities based on receptor sensitivity, substantial adverse effect on the population, or spatial distribution of these species; or likelihood of substantially modifying, destroying or isolating an area of important habitat for migratory species is not expected. .
- Regarding interaction with marine fauna, Section 6.8.7 of the EP has been updated with a new control for limiting Petroleum Activities Program vessel speeds in the Operational Area to 10 km or less when in the humpback whale migration / pygmy blue whale migration BIA's, during migration periods.
- Regarding decommissioning, all major and ancillary infrastructure, including the trunkline, will be designed and maintained to enable removal at the time of decommissioning. Identified decommissioning critical systems (asset systems that will be required to facilitate the flushing, cleaning and decommissioning of infrastructure) will be appropriately maintained through operational life to ensure system functionality is available at the time of decommissioning. A technical decommissioning assessment has been undertaken and a Decommissioning Plan developed. The plan may be used at the time of decommissioning, with due consideration of best environmental outcome and technological advances available at the time, noting detailed plans and justification will be subject of a future EP.
- Woodside has 30+ years of operating experience, with a focus on safety, reliability, efficiency and environmental performance. Woodside recognises that our performance in Environmental, Social and Governance (ESG) is integral to our success. Woodside's risk and compliance processes support Woodside to manage risk, comply with the law and implement fit for purpose processes.

- Woodside has responded to GAP's concerns and updated the EP where indicated in the correspondence; Woodside considers that the impacts have been reduced to ALARP and acceptable levels.
- Woodside noted draft EPs are not provided to stakeholders while in development or under assessment and provided a summary of its consultation process.
- On 2 September 2022, GAP sent a letter to NOPSEMA (cc Woodside). The letter called for NOPSEMA to not to accept the SITI EP and to make a request for the Woodside to provide further information on how it has provided a reasonable opportunity for Greenpeace to provide feedback.
  - GAP stated the information provided to them by Woodside and the consultation period were insufficient,
  - Woodside has not adequately responded to or addressed the issues raised by GAP on 29 June 2022.
  - GAP requested an additional four weeks to provide feedback to Woodside.
- On 28 September 2022, GAP provided feedback on the SITI EP. GAP requested that:
  - Woodside provides further information; and
  - NOPSEMA should not accept the SITI EP.
  - GAP commented:
    - Not all relevant persons have been consulted
    - Woodside has not adequately demonstrated that the environmental impacts and risks will be reduced to ALARP and acceptable level
    - The proposed activity is inconsistent with the Blue Whale Conservation Management Plan and threatened species recovery plans
    - The SITI EP is inconsistent with the principles of ecologically sustainable development
    - Woodside should describe the faunal communities currently using the neighbouring Pluto trunkline across a range of water depths and assess the likely impacts to those communities from seabed disturbance given their close proximity to the proposed new trunkline.
- On 1 May 2023, GAP emailed Woodside regarding scheduling of a meeting.
  - GAP thanked Woodside for the offer of a direct meeting made at the 2023 Woodside AGM and this letter is confirmation of acceptance of the meeting offer.
  - GAP reiterated its commitment to ensuring fast and effective action on climate change in line with the internationally agreed Paris climate goal and that in late 2021, GAP began to specifically call on Woodside to abandon fossil fuel expansion plans particularly in relation to the proposed development of the Burrup Hub.
  - GAP stated its concern about potential threats to marine ecosystems and wildlife caused by the development of the Burrup Hub including to whale populations in WA waters.
  - GAP stated there is a genuine opportunity for Woodside to become a world leader in the transformation from fossil fuels to renewable energy.
- On 9 May 2023, Woodside emailed GAP thanking GAP for its letter dated 1 May 2023, reiterating Woodside's willingness to engage with GAP, and welcoming an opportunity for Woodside's climate team to engage with GAP to discuss GAP's views on Woodside's climate strategy and most recent climate report. The offer to meet was extended at either an executive or CEO level either virtually or in-person.

- On 15 May 2023, Woodside emailed GAP and attached a detailed table of responses to address specific claims and objections in 28 September 2022 correspondence regarding the proposed activity, where appropriate. Responses are summarised below. Woodside also attached the updated Consultation Information Sheet.
  - Woodside responded that it had undertaken a comprehensive assessment, including full justification of the impacts and risks of dredging for NOPSEMA to assess according to the Regulations. The depth-averaged TSS concentration is the value calculated as an average over the modelled layers in the water column. section 6.7.2 of the EP has been updated to include further assessment of the potential impacts of elevated suspended sediment from the Petroleum Activities Program on fish assemblages.
  - Section 5 of Appendix H (Master Existing Environment) and Section 5.4.4 of the Scarborough OPP provide a description of the fish assemblages of the North-west Marine Region, while Section 7.1.6 of the Scarborough OPP provides an assessment of potential impacts and risk to fish from elevated suspended sediments.
  - The thresholds are described in detail (with associated references) in Section 4 of Appendix I (dredge sediment dispersion modelling) of the Scarborough OPP (Revision 5).
  - Section 7.8 of the SITI EP has been updated to provide details of the tiered monitoring and management framework as it relates to the Commonwealth waters activities, including the trigger values and associated dredge management actions. and Appendix I includes a later version of the modelling report, which will be made available once the revised EP is submitted and accepted by NOPSEMA. The approved Scarborough Project Dredging and Spoil Disposal Management Plan (DSDMP) will be published online and includes the Water Quality Thresholds Report as an appendix to the DSDMP.
- On 15 May 2023, Woodside received and auto response to its email detailed above (of the same date) stating that if a matter were urgent, an alternative GAP representative could be contacted.
- On 13 June 2023, GAP emailed NOPSEMA and cc'd Woodside in relation to the four Scarborough EPs currently being assessed by NOPSEMA and urged NOPSEMA to not accept the EPs due to Woodside's unsatisfactory consultation approach (insufficient time and insufficient information provided for consultation).
  - GAP confirmed its relevant person status and summarised recent communications with Woodside across the four Scarborough Project EPs. Regarding this EP, GAP acknowledged Woodside's response of 15 May 2023, GAP's auto reply on the same date and that Woodside submitted an updated version of this EP to NOPSEMA on or before 1 June 2023. Further claims made by GAP are summarised as follows:
    - Submission of EPs without Notice – Woodside did not seek confirmation that information provided to GAP regarding the EPs was sufficient, nor did Woodside invite any response to the information by a particular date before it intended to resubmit. Further, Woodside did not notify GAP as to the imminent submission of the EPs, nor that any of the EPs had been resubmitted. GAP has had to continue to rely on NOPSEMA's website for status updates.
    - GAP stated Woodside cannot unilaterally determine what is a reasonable period or sufficient information for a 'relevant person' such as GAP without seeking and considering GAP's views. It was not clear to GAP why Woodside did not at least notify GAP of imminent resubmission of EPs as this would allow GAP to communicate to Woodside whether further time was required to respond to information. GAP stated it had previously indicated it required around a month to respond to information from Woodside. GAP stated this did not meet the Regulations nor NOPSEMA's consultation guideline.
    - Failure to provide sufficient time for consultation – GAP stated it had not yet had an opportunity to fully consider whether it had been provided with sufficient information in Woodside's recent responses to allow GAP to make an informed assessment of the possible consequences of the activities on GAP's functions, interests or activities (as required under reg 11A(2)). This was mainly because GAP believed Woodside had not provided GAP with sufficient time to consider its responses.
    - GAP stated 'NOPSEMA's consultation guideline indicated that what constitutes a 'reasonable period' may be informed by the "nature, scale and complexity of an activity as well as the extent and severity of potential impacts and risks on a relevant persons["] functions, interests or activities" and that "[r]elevant persons may

have also provided the titleholder with their views of what constitutes reasonable timeframes, their availability and or accessibility issues that should be taken into account.”

- GAP considered a reasonable period to be around one month in most cases but sometimes more.
- Woodside had only allowed 4-7 business days for GAP to review and respond to additional information since the GAP representative’s return from travel.
- GAP provided the timeframes it required to respond to Woodside’s latest responses to each of the Scarborough EPs. For this EP it required 4 weeks from 11 July 2023.
- The timeframes were required because Woodside had sent responses on multiple EPs in short succession despite having had a significant amount of time to prepare some of its responses e.g. Woodside had had over 7 months to consider GAP’s last submission on this EP and on another Scarborough EP (Drilling and Completions).
- GAP was experiencing a high volume of requests for consultation on other Woodside projects and those of other proponents due to the backlog of consultation requests following clarity on the Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 appeal decision.
- Woodside had refused to provide GAP with additional information on the Scarborough Subsea EP despite repeated requests. The first time GAP saw detail on this EP was on 30 May 2023 when it was published by NOPSEMA. GAP required considerable time to consider and respond to this complex document.
- GAP referred to Woodside’s statement in several of its recent correspondences: ‘given the well-informed feedback received together with the length of time the [Environment Plan] has been open for comment, any further feedback GAP provides on the [Environment Plan] will be accepted and considered as part of ongoing consultation.’ GAP stated that while this statement was not clear, GAP assumed Woodside was implying that the total period the EP had been open for comment was the primary determinant of ‘reasonable period’. However, GAP pointed out that NOPSEMA’s consultation guideline states clearly: Information may well need to be provided in an iterative manner, as finer detail and precision is developed through the consultation process.” GAP has found this to be true.
- GAP further stated that NOPSEMA’s guideline does not clarify whether the ‘reasonable period’ relates to the overall period of consultation or each piece of information provided. GAP stated it had discussed this issue in previous correspondence to Woodside and NOPSEMA. GAP stated given that the period must be sufficient to allow GAP to make an informed assessment, it must tie in with the time at which sufficient information was provided i.e. if insufficient information has been provided, time will not start to run. At a minimum, it would appear that the ‘reasonable period’ would commence from the provision of new or additional information.
- GAP stated it believed it is more relevant to consider when information was last provided when determining whether a ‘reasonable period’ had been provided.
- GAP concluded by stating it believed Woodside’s consultation with GAP did not meet NOPSEMA’s guidelines and Woodside had not met its consultation obligations under reg 11A of the Regulations nor demonstrated the criteria for acceptance of the Environment Plans in reg 10A.
- On 23 June 2023, Woodside thanked GAP via email for GAP’s letter dated 13 June 2023 sent to NOPSEMA and cc’d to Woodside. Woodside stated:
  - Based on the long history of consultation with GAP, Woodside was comfortable with the consultation between Woodside and GAP which had allowed GAP many opportunities to provide Woodside with its claims and objections as they related to the proposed activities under the four Scarborough EPs.
  - Woodside stated it remained open to consulting with GAP and additional feedback GAP provided on the Scarborough EPs would be accepted and considered as part of ongoing consultation.

- Woodside further stated that as per Woodside's ongoing consultation approach, feedback and comments received would continue to be assessed and responded to, as appropriate, 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.
- On 11 July 2023, GAP provided a response to Woodside and the regulator that contained an objection to the acceptance of the current version of the EP, due to consultation not meeting minimum requirements (and the Regulations) in the following respects:
  - Failure to adapt the consultation process to Greenpeace's needs;
  - Failure to provide sufficient information;
  - Failure to provide sufficient time to consider additional information; and
  - Failure to meet the general principles for effective consultation.
  - Relating to the above objections and claims, GAP made several claims and requests from Woodside:
    - GAP requested a detailed description of Woodside usual approach to 'relevant person' consultation, including guiding principles underlying the approach. GAP also requested a detailed description of how that general approach has been adapted to it's individual needs.
    - GAP requested that Woodside provide:
      - An explanation as to how it determines the form of information (including what constitutes 'sufficient information') to provide to 'relevant persons';
      - An explanation of how the form of information (including what constitutes 'sufficient information') has been adapted to GPAP's needs; and
      - Detailed justification as to why it believes that it has provided GAP with 'sufficient information'.
    - GAP contends that withholding updated versions of the Environment Plan is not consistent with the principles of openness and transparency and GAP requested a copy of the most recent version of the environmental plan, its appendices and the tiered monitoring and management framework.
    - If it cannot be provided, GAP alternatively requested that Woodside provide detailed explanations as to why it is unnecessary and how it is consistent with the principles of openness and transparency.
    - GAP requested a description of how Woodside determines what is a 'reasonable period' for 'relevant person' consultation and how that 'reasonable period' has been adapted to Greenpeace's individual needs.
    - GAP contends that there is outstanding additional information required from Woodside. GAP provided a number of requests for information from previous correspondence:
      - (29/6/22) Regarding the Borrow Ground backfill sourcing option that conveys the lowest environmental impact, and Commonwealth compensation.
      - Additionally, GAP recommended NOPSEMA request information about the cost of each Borrow Ground option.
      - GAP recommended that Woodside revise the environmental assessment of the Borrow Ground options so they are not reliant on depth-averaged turbidity modelling.
      - (29/6/22) Regarding activities not taking place within the turtle BIAS during peak hatching periods.
      - (29/6/22) Regarding a summary of the expected offsets and ACCUs.

- GAP additionally requested information as to how Woodside proposed to reduce scope 1 emissions from the activities to net zero; why the EP does not include actions to reduce scope 1 emissions; and if the proposal includes use of offsets, a summary of those offsets.
- (29/6/22) Regarding a check of the modelling completed for the trunkline EP for circular reasoning issues.
- (29/6/22) Regarding the passive acoustic monitoring system, and that activities should cease immediately after malfunction or damage to the system.
- GAP asked how many times a passive acoustic monitoring system has malfunctioned or been damaged during Woodside's activities in the past 5 years.
- GAP contends that Woodside has now instigated temporal restrictions to avoid peak whale seasons and asks how Woodside will locate pygmy blue whales and humpback whales that may be using the BIAs during the activities in the EP to ensure they do not incur acoustic injuries.
- GAP asks what steps Woodside will take to ensure these issues do not occur during the activities.
- (29/6/22) Regarding more frequent and more thorough inspections of all infrastructure.
- GAP requested Woodside provide an ongoing inspection and maintenance plan for the trunkline.
- (28/9/22) Regarding consultation with marine tourism representatives in the EMBA.
- (28/9/22) Regarding provision of information to NOPSEMA about potential conflicts, and input into risk and impact assessments to ensure they are reduced to an ALARP level.
- (28/9/22) Regarding a definition of and justification for using "depth-averaged SSC concentration".
- GAP requested a copy of Woodside's further assessment as referenced in Woodside's correspondence on 15/5/23.
- (28/9/22) Regarding description of the fish assemblage diversity and abundance using the existing neighbouring trunkline from the Commonwealth waters boundary to KP 50, and the request for Woodside to assess the likely impacts to those communities from suspended sediments.
- (28/9/22) Regarding the justification for not ceasing activities causing the turbidity when trigger values are exceeded and adjustments made in the EP. GAP also questioned at what point would excessive turbidity levels cause operations to cease?
- GAP requested a copy of the updated EP including the Tiered Monitoring and Management Framework.
- (28/9/22) Regarding updated modelling on dredged sediment dispersion.
- GAP requested a copy of: RPS., 2020. Scarborough Development Dredged Sediment Dispersion Modelling. Prepared for Woodside Energy Ltd. RPS Group.
- (28/9/22) Regarding full text copies of several references cited in the EP.
- GAP provided feedback on the activity and requests for information:
- Cumulative and indirect impacts - state waters trunkline.
- GAP requested an evaluation of the potential cumulative risks and impacts from the Entire Trunkline in its entirety.
- An evaluation of the potential cumulative impacts, including the indirect risks and impacts from the state waters trunkline.
- GAP contends that if Woodside disagrees that the indirect or cumulative impacts of the state waters trunkline should be evaluated in the EP, it requests justification and more information.



- Scope 1 greenhouse gas emissions.
- GAP requested request information as to how Woodside proposes to reduce the scope 1 greenhouse gas emissions from the activities in the EP to net zero. Or in the alternative, justification as to why the EP does not include actions to reduce scope 1 greenhouse gas emissions to net zero.
- On 27 July 2023, Woodside responded to GAP thanking them for their correspondence and responding to new claims. Woodside outlined its attempts to engage in genuine, two-way consultation with Greenpeace since December 2018 and that it continues to be open to consulting further. The responses to new claims included the following:
  - Claims of failure to consult effectively were addressed with the methodology that Woodside apply to non government groups or organisations and outlining correspondence from Woodside which had been missed by GAP in their letter.
  - GAP claims it has been dissatisfied with the way it has been consulted were addressed with evidence of ongoing direct consultation as well opportunities for GAP to attend a variety of community-based information sessions.
  - Lack of sufficient information claims have been addressed by evidence of a meeting and four detailed responses to GAP correspondence on the SITI EP.
  - Requests by GAP for a copy of EP were denied for a number of reasons.
  - Claims of lack of sufficient time for consultation has been addressed as correspondence between Woodside and Greenpeace on this EP has been taking place since 8 April 2022.
  - The methodology outlining how Woodside meets NOPSEMA consultation requirements was provided as requested to demonstrate sufficient time and information.
  - Further information was provided around the borrow grounds enquiries.
  - Actions being taken to ensure limited impact on peak turtle hatchling emergence periods.
  - General enquiries around reducing scope 1 emissions for activities to net zero and use of offsets had been addressed previously.
  - Circular reasoning modelling enquiries were rejected and new information provided to evidence these claims.
  - Passive acoustic monitoring concerns were addressed by explaining they were not being used as part of the SITI EP PAP.
  - GAP would like to see more inspections around infrastructure but the EP already addresses this.
  - Woodside has added more detail to a GAP enquiry around using depth-averaged SSC concentration.
  - Woodside has provided links to three resources to assist GAP around understand fish assembly diversity and abundance.
  - Woodside has referred GAP to the Scarborough Dredging and Spoil Disposal Management Plan which is publicly available for further information.
  - Cumulative impacts from State, and Commonwealth water activities have been addressed in the EP.
- On 27 July 2023, Woodside resent an email in response to an out of office reply.
- On 3 August 2023, Woodside wrote to NOPSEMA sharing GAP's stance on Woodside which it had posted on its website and shared with media on 2 August 2023 stating the following:

- A public statement by Greenpeace stating its objective to “use every means possible to stop Woodside”. In its statement GAP says: “Greenpeace will oppose Woodside’s Burrup Hub at every step, and that means stopping its dangerous seismic blasting.”
- Woodside asked that NOPSEMA note the actions threatened by GAP.
- On 7 August 2023, GAP wrote to NOPSEMA and copied Woodside:
  - GAP urged NOPSEMA to not accept this EP, reiterated its relevant person status and recapped consultation between GAP and Woodside to date.
  - GAP claimed Woodside had not adequately discharged its obligations under reg 25.
  - GAP claimed consultation had worsened since Woodside’s letter dated 27 July 2023 in which Woodside criticised GAP and demonstrated Woodside’s misconception of the consultation requirements in terms of reasonable time and sufficient information, and the formation of relevant person consultation; GAP stated it preferred to consult in writing.
  - GAP stated that outside the relevant person consultation process, GAP’s CEO had continued to request meetings with Woodside’s CEO but none had eventuated.
  - GAP stated its alleged public activities were irrelevant to the statutory requirement for Woodside to consult in regs 25(2) and 25(3).
  - GAP set out why it required additional information in relation to the EP – GAP stated its functions, interests and activities included - but were not limited to - protecting marine life and identifying climate related harm caused by Woodside’s activities to foster public engagement.
  - GAP provided examples of its work and listed possible consequences of Woodside’s activities (harm to marine life and marine environments).
  - GAP claimed without the additional information it required, it could not conduct its work effectively.
  - Additionally, GAP stated it had made several information requests that Woodside had not met related to the relevant person consultation process.
  - GAP summarised how the consultation process should be adapted to GAP’s needs i.e. all consultation in writing; GAP typically requires one month to respond but sometimes more; GAP expects Woodside to not resubmit EPs to NOPSEMA for assessment without first allowing GAP one month or longer if required; GAP requires the full text of any changes made to a published draft EP provided as an updated version; Woodside should be generous with additional information; Woodside should answer GAP’s questions; additional information requested needs to be highly detailed.
  - GAP provided a list of previously requested additional information. GAP stated while Woodside had previously provided responses several had not addressed their concerns.
  - GAP stated it did not believe the EP met the criteria for acceptance in reg 34, specifically 34(b) and 34(c) and that NOPSEMA could not accept the EP.
  - GAP stated the EP was inconsistent with the Recovery Plan for Marine Turtles in Australia, noted Woodside had considered several mitigation measures but had deliberately chosen to not adopt them for reasons related to cost and convenience, and noted Woodside had failed to adopt and implement basic mitigation measures as per the National Light Pollution Guidelines for Wildlife.
  - GAP stated Woodside had not reduced emissions from the activities in the EP to net zero.
  - GAP stated the EP only addressed the installation of the trunkline, not the ongoing management of the trunkline which should be included in the EP and then superseded by a future EP.
  - GAP stated water turbidity modelling was not fit for purpose.
  - GAP stated Woodside had not considered indirect and/or cumulative impacts from developing the entire Scarborough trunkline, i.e. both the state waters and commonwealth waters components.
  - GAP stated Woodside had not considered the cumulative and/or indirect impacts of the scope 3 emissions that would be released through the development of the Scarborough gas field.
  - GAP stated marine activities should not continue through the night or during poor visibility.

- GAP stated Woodside had failed to reduce the risk of vessel strikes on marine fauna to ALARP.
- Given the persistent and bioaccumulative nature of chemicals used in planned or unplanned activities, Woodside should investigate alternative products.
- GAP expressed concern that consultation with other relevant persons may also have fallen short of the minimum requirements.
- On 11 August 2023, Woodside responded and stated:
  - Woodside had been in continued dialogue and a significant amount of information had been exchanged between GAP and Woodside since Woodside first contacted GAP in 2018.
  - Although GAP did not participate in consultation regarding the Scarborough OPP in 2018, Woodside and GAP had met on 1 June 2022 to discuss Woodside’s activities and determine authentic, two-way consultation yet the day after the meeting, GAP launched an on-line campaign against Woodside and targeted Woodside with protest-based campaigns, unlawful entry to safety exclusion zones and boarding of Woodside’s decommissioned infrastructure.
  - Woodside had continued to accommodate GAP’s requests for information.
  - GAP CEO’s request to meet with Woodside to discuss Woodside’s climate strategy was agreed and an offer to meet with Woodside’s climate team was confirmed in a letter from Woodside’s CEO on 9 May 2023. Woodside’s EVP of Strategy and Climate had also attempted to meet GAP.
  - GAP had not requested to meet about Woodside’s Scarborough EPs nor had GAP disclosed how it preferred to be consulted.
  - GAP had not provided Woodside with the opportunity to consider GAPs’ consultation expectations or needs - inconsistent with other ‘relevant persons’ that had provided statements regarding their consultation preferences.
  - Woodside had provided Consultation Information Sheets and responses to issues regarding technical matters, in relation to all four Scarborough EPs including this EP, the full draft of which had been available since 13 January 2022.
  - GAP had shown a high level of technical awareness and understanding due to questions and issues raised in writing with Woodside, demonstrating GAP’s understanding of the potential environmental risks and impacts posed by the activities in the EPs as well as the mitigations proposed by Woodside.
  - Woodside had responded to GAP’s correspondence, advertised in local, State and National newspapers about its plans and held Community Information Sessions which were promoted to local communities and more broadly across social media. To Woodside’s knowledge, GAP had not attended a Woodside session (other eNGO’s had, enabling 2-way consultation).
  - Woodside had made genuine attempts to consult with GAP and given GAP many opportunities to provide Woodside with its claims and objections.
  - Woodside continued to act in good faith and accept feedback from GAP.
  - As articulated by recent case law, Woodside’s position was that in light of the concepts of “reasonable time”, “reasonable diligence”, a consultation obligation “must be capable of practical and reasonable discharge... that must be capable of performance”. Given the length of time involved, the amount of information provided, and the opportunity given to consult, Woodside was satisfied that an appropriate level of consultation had taken place with GAP.
  - Woodside was concerned that the protracted engagement might be aimed at achieving alternative outcomes.
  - Woodside remained open to consulting with GAP.
  - Woodside noted GAP’s 1 August 2023 statement ‘Greenpeace vows to fight Woodside's dangerous seismic blasting in which Greenpeace states it will “use every means possible to stop Woodside”’.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
GAP has responded and provided feedback, objections and claims relating to:	Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided to address	Woodside has consulted GAP in the course of preparing this EP. Woodside has assessed the claims or objections raised by GAP. An additional

<ul style="list-style-type: none"> <li>• GAP self-identified as a relevant person and requested to be consulted on this EP and other Woodside EPs.</li> <li>• GAP requested more information on the activity.</li> </ul> <p>GAP claims Woodside has not:</p> <ul style="list-style-type: none"> <li>• Consulted with all relevant persons;</li> <li>• Adequately evaluated all impacts and risks;</li> <li>• Adequately demonstrated that the environmental impacts and risks will be reduced to as low as reasonably practicable;</li> <li>• Adequately demonstrated that the environmental impacts and risks will be of an acceptable level;</li> <li>• And that the EP is inconsistent with the Blue Whale Conservation Management Plan and threatened species recovery plans;</li> <li>• The EP is inconsistent with the principles of ecologically sustainable development, specifically the 'intergenerational principle'.</li> </ul> <p>GAP has further responded and provided feedback, objections and claims relating to:</p> <ul style="list-style-type: none"> <li>• Consultation</li> <li>• Impact and risk identification</li> <li>• Offshore Borrow Ground dredging and back fill</li> <li>• Environmental risk analysis and summary</li> <li>• Physical presence - Seabed disturbance (trenching, spoil disposal, borrow ground dredging and trunkline backfill)</li> <li>• Modelling for turbidity associated with dredging not being fit for purpose</li> <li>• Routine light emissions from project vessels and ability to meet National Light Pollution Guidelines for Wildlife. Consideration of no activities at night</li> </ul>	<p>specific claims and objections raised on the proposed activity, where appropriate.</p> <p>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 <b>Section 7</b>).</p>	<p>control was put in place for limiting Petroleum Activities Program vessel speeds in the Operational Area to 10 kn or less when in the humpback whale migration / pygmy blue whale migration BIAs, during migration periods (<b>PS 6.7.1</b>).</p> <p>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.</p>
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<ul style="list-style-type: none"> <li>• Routine atmospheric emissions and GHG emissions</li> <li>• Routine acoustic emissions</li> <li>• Routine and non-routine discharges – trunkline installation and pre-commissioning. Consideration of alternative chemicals</li> <li>• Unplanned Hydrocarbon Release - Vessel Collision</li> <li>• Physical presence (unplanned) - interaction with marine fauna. Vessel strike risk to be reduced to ALARP</li> <li>• Viability of decommissioning</li> <li>• Woodside not being a fit and proper Proponent.</li> </ul> <p>GAP has further responded and provided feedback, objections and claims relating to:</p> <ul style="list-style-type: none"> <li>• Climate change and abandoning fossil fuel plans – reducing emissions to net zero</li> <li>• Threats to marine ecosystems and whales.</li> </ul> <p>GAP requested further information regarding the state waters trunkline on:</p> <ul style="list-style-type: none"> <li>• Ongoing trunkline management, not just installation</li> <li>• Cumulative and indirect impacts regarding the state waters trunkline.</li> </ul>		
<p><b>Australian Conservation Foundation (ACF)</b></p>		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Australian Conservation Foundation (ACF) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to ACF on 30 August 2022 based on their function, interest, and activities.</li> <li>• Woodside addressed and responded to ACF over a 11-month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p>		

- On 15 July 2022, the Environmental Defenders Office (EDO) sent a letter to Woodside's Legal representation, on behalf of its client, ACF. During the course of preparing the EP, ACF self-identified, provided comment on proposed activity and requested to be consulted on the EP.
  - ACF included a list of topics raised in its letter that referenced the draft EP which was made available on NOPSEMA's website on 13 January 2022. The topics covered the impacts and risks of activities in relation to marine and avian species, benthic habitats and communities, Marine Parks, World Heritage areas and the shoreline, and coral receptors. These are summarised below (relevant to the SITI EP – other letter points are covered in the relevant EP):
  - Insufficient consultation and incorporation of feedback into the EP.
  - Risks to marine and avian species could include:
  - Vulnerable, endangered and critically endangered marine species within both the operational area and the environment being affected,
  - Routine acoustic and light emissions having potential impacts and risks for marine species including light emissions being identified as a “high risk threat” with potential to affect the overall reproductive output of a stock, and therefore recovery of the species; the worst-case scenario for acoustic emissions would impact on cetaceans by reference to the standards in the Blue Whale Conservation Management Plan, as well as the identified potential foraging areas that overlap migration paths and the operational area; humpback whales could have behavioural responses to acoustic emissions affecting their migration; marine turtles could avoid important habitats and could sustain physical damage in areas reached by acoustic emissions;
  - The worst-case scenario for a hydrocarbon spill would involve the release of 2,000 m<sup>3</sup> of marine diesel into the marine environment, which could impact marine parks, World Heritage areas and the shoreline and a worst-case hydrocarbon spill is expected to have a “major” impact on coral receptors.
  - AFC stated the Scarborough Gas Project EPs should include an evaluation of all impacts and risks related to GHG emissions that will be caused by the Scarborough Gas Project.
  - ACF stated it is a relevant person in relation to the Scarborough Gas Project EPs and is required to be consulted by Woodside pursuant to Div 2.2A of the Environment Regulations.
- On 30 August 2022, Woodside responded to ACF with an email covering the following points:
  - Woodside confirmed that it is open to receiving feedback and to discussing issues raised in relation to each of its Scarborough Environment Plans (EPs). Consultation is ongoing and feedback is 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 stated the SITI EP Consultation Information Sheet available on the Woodside website since August 2021, and also attached to the letter, confirmed that Woodside plans to undertake the proposed activities in Commonwealth waters for the proposed Scarborough development. Woodside further stated that Revision 1 of the SITI EP dated January 2022 and made available on NOPSEMA's website since January 2022, contains further information regarding the activities, impacts and risks.
  - Woodside noted that ACF's letter generally related to impacts and risks of the Petroleum Activities Program primarily in relation to marine species and GHG emissions and that it also included references to potential impacts to Marine Parks, World Heritage areas and the shoreline and coral receptors. Woodside confirmed that following an assessment of the letter, no new information had been presented for consideration under the Petroleum Activities Program for this EP.
  - On impacts and risks of activities in relation to marine species, Marine Parks, World Heritage areas and the shoreline, and coral receptors, Woodside confirmed that for the Petroleum Activities Program, an environment impact and risk assessment was carried out in Section 6 (Rev 1) of the publicly available EP. The risk assessment, covered marine species, Marine Parks, World Heritage areas and the shoreline, and coral receptors, and included a consideration of controls, performance outcomes, standards and measurement criteria relating to risks relevant to these aspects and receptors.
  - On GHG emissions, Woodside confirmed that the SITI EP assesses both direct and indirect impacts and risks associated with the proposed activities, having regard to the nature and scale of the proposed Petroleum Activities Program and the extraction of Scarborough gas for onshore processing, and the combustion of Scarborough gas, are not activities within the scope of the SITI EP. GHG emissions associated with the activity are considered in Section 6.6.5 (Rev 1) of the publicly available EP.

- Woodside stated that during the course of development of the EP, it had received feedback from non-government organisations with similar interests in this activity. Woodside further stated it has addressed this feedback and has updated the EP where appropriate. Section 5 of the updated EP will include a summary of stakeholder feedback (including responses to relevant claims and objections) and will be made available on the NOPSEMA website following acceptance.
- The response sent by Woodside to ACF on 30 August 2022 included an attachment of additional information that Woodside has also provided to non-government organisations in response to similar subjects to those outlined in ACF's letter. Summarised at a high level that additional information included:
  - How consultation requirements set out in reg 11A of the Environment Regulations have been met and updates to Section 5 of the EP to address this
  - Assessment of backfill and sediment sourcing options in relation to the Offshore Borrow Ground
  - Risk analysis and cumulative impact, including from concurrent operations and where / how these have been addressed in the EP
  - Environmental impact from seabed disturbance activities including impacts to the Dampier AMP from the Offshore Borrow Ground dredging, no impacts to seagrass or dugongs and faunal communities established along the Pluto trunkline
  - GHG emissions including Woodside's approach to emissions reduction targets and total GHG emissions for the Petroleum Activities Program
  - Demonstration that the Petroleum Activities Program is not inconsistent with the principles of ESD
  - Demonstration that noise modelling carried out has been appropriate, including explanation of the JASMINE model and noise thresholds used
  - Noise impacts to pygmy blue whales, masking impacts from underwater noise, ALARP position for controls relating to noise impacts on PBW and consideration of additional technologies for PBW detection
  - Impacts from trunkline discharges (FCGT)
  - Information in relation to worst case credible loss of containment scenario including EMBA, impacts to plankton, duration of hydrocarbon persistence, and ALARP / acceptability of impacts and risks from loss of containment
  - Control measures relating to interaction with marine fauna including ALARP position for cetacean detection; and
  - Decommissioning philosophy for the Trunkline and associated infrastructure.
- On 5 September 2022, the Environmental Defenders Office (EDO) sent a letter to Woodside's Legal representation, on behalf of its client, ACF. EDO commented:
  - Woodside's letter of 30 August 2022 in response to ACF's letter of 15 July 2022, did not address the other EPs that have been submitted to NOPSEMA (i.e. the Scarborough Drilling and Completions Environment Plan and the Scarborough 4D B1 Marine Seismic Survey Environment Plan);
  - Woodside did not acknowledge ACF's 'relevant person' status in relation to the Scarborough EPs; and
  - Woodside did not provide sufficient information on the proposed activity under reg 11A(2) to allow consultation to commence.
- On 14 September 2022, EDO on behalf of its client, ACF, sent a letter to NOPSEMA (cc Woodside's Legal representation). EDO commented:
  - Woodside has not stated whether it recognises that ACF is a relevant person;
  - Woodside has not provided sufficient information for ACF to determine whether its functions, interests or activities may be affected and the Scarborough EPs do not contain information required by the Environment Regulations.
- On 19 September 2022, Woodside responded to ACF via EDO. Woodside confirmed it is open to receiving feedback and to discussing with ACF, issues raised in relation to each of its Scarborough EPs. Woodside noted:
  - It has attempted to provide information that it assumes may be of interest to ACF to confirm issues that have been addressed and to allay potential concerns ACF may have;
  - The publicly available version of the EP together with information provided in its 30 August 2022 response addresses the impacts and risks of the activity and the relevant controls proposed to be adopted;
  - For the Petroleum Activities Program, an environment impact and risk assessment was carried out in Section 6 of the publicly available EP. The risk assessment includes a consideration of controls, performance outcomes, standards and measurement criteria relating to risks relevant to these aspects and receptors;

- An environment impact and risk assessment was carried out in Section 6 of the publicly available EP in relation to GHGs. The risk assessment includes a consideration of controls, performance outcomes, standards and measurement criteria relating to risks relevant to these aspects and receptors;
- Given recent correspondence, ACF has clearly read the publicly available information on the EP and has had sufficient time to provide feedback; and its invitation to engage with ACF to understand specific concerns or issues.
- Woodside extended an invite to meet with ACF regarding the proposed activity and requested feedback by 11 October 2022.
- 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.
- On 29 September 2022, Woodside responded to ACF offering a meeting on 10 October 2022.
- On 5 October 2022, ACF responded and provided its availability to meet via video conference.
- On 11 October 2022, Woodside provided a briefing to ACF via video conference on the proposed activity 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 12 October 2022, Woodside emailed ACF thanking the organisation for the meeting.
- On 15 May 2023, Woodside emailed ACF and included responses to address specific claims and objections raised in the 11 October 2022 meeting regarding the proposed activity, where appropriate Woodside noted:
  - Regarding impacts of trunkline installation activities on threatened migratory species and marine species in general and Woodside's controls deemed to be inadequate, Woodside confirmed it has undertaken a comprehensive assessment, including full justification of the impacts and risks for NOPSEMA in accordance with the Environmental Regulations and NOPSEMA's guidance. Section 4.6 of the EP identifies migratory marine and terrestrial species under the EPBC Act which may occur within the Operational Area and/or EMBA. Section 6 of the EP assesses impact potential to these and other species /environmental factors.
  - Regarding why the proposed trunkline needs to be buried in certain locations, Woodside advised that for the section of trunkline from shore to maximum KP (Kilometre Point) 50 in Commonwealth waters (likely to be less), there will be a requirement for some trenching (pre-lay) and back fill (post-lay) to stabilise the trunkline to ensure the integrity and safety of the trunkline during construction and operations phases.
  - Woodside provided information in the Scarborough OPP relating to the Scarborough trunkline's proximity to the Montebello Multiple Use Zone
  - Regarding cyclone risk mitigation, Woodside noted the EP includes dangerous weather preparation arrangements. As the timing of some activities associated with the Petroleum Activities Program are not yet confirmed, it is possible seabed intervention and trunkline installation activities will overlap with the cyclone season. As per Section 7.15.7.3 of the EP, if activities occur during this time, vessel contractors must have a Cyclone Contingency Plan (CCP) in place. The project vessels will receive daily forecasts from the Bureau of Meteorology (BoM). If a cyclone (or severe weather event) is forecast, the path and its development will be plotted and monitored using the BoM data. If there is the potential for the cyclone to affect the Petroleum Activities Program, the CCP will be actioned. If required, vessels can transit from the proposed track of the cyclone (or the severe weather event).
  - Woodside advised no piling activities have been included in the EP because the Floating Production Unit (FPU) suction piling activities are outside the scope of the Petroleum Activities Program of the SITI EP and will be the subject of a subsequent EP. Woodside also noted no impact pile driving is proposed as part of the Scarborough Project, only suction piles.
  - Woodside advised sand backfill will be sourced from the offshore borrow ground. Rock supply, quarrying and load out will occur outside the Operational Area and is outside the scope of this EP. It is noted however that rock will be locally sourced from the Boral Quarry Karratha.
  - Woodside advised tie-in to the existing Pluto trunkline does not meet the economic drivers for the Scarborough project. The existing Pluto project and trunkline is expected to continue operating at full capacity for a number of years.



- Regarding Petroleum Activities Program timing; Woodside advised the EP has been updated to reflect an earliest commencement date of Q2 2023 - pending approvals and subject to change depending on weather, vessel availability and unforeseen circumstances or delays..
- Woodside confirmed Section 6 of the EP assesses the risk and impact potential from marine fauna interactions and presents controls to reduce the risks to ALARP. Risks can be reduced to ALARP and acceptable levels without the avoidance of seasonal sensitivities like migration and breeding. This is the case also for other impact assessments such as Section 6.6.4 Routine Light Emissions from project vessels and Section 6.6.6 Routine Acoustic Emissions.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>ACF has requested feedback on impacts and risks of activities in relation to:</p> <ul style="list-style-type: none"> <li>• marine and avian species, benthic habitats and communities, Marine Parks, World Heritage areas and the shoreline, and coral receptors;</li> <li>• GHG emissions.</li> </ul> <p>ACF requested acknowledgement of 'relevant person' status.</p> <p>ACF provided feedback that Woodside has not provided sufficient information on the proposed activity under the regulations to allow consultation to commence.</p> <p>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.</p> <p>ACF has met with Woodside and provided additional consultation information on the broader Scarborough activities, including this proposed activity.</p>	<p>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.</p> <p>Woodside has advised that the draft EP has been available on NOPSEMA's website since 30 August 2021. Woodside considers information in the EP including summaries of modelling and studies relating to the Petroleum Activities Program to be sufficient to address feedback, objection and claims received as well as requests for additional information.</p> <p>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.</p> <p>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 <b>Section 7</b>).</p>	<p>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.</p>

**350 Australia (350A)**

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with 350 Australia (350A) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to 350A on 25 February 2022 based on their function, interest, and activities..

- Woodside has addressed and responded to 350A over a 17 month period.

**Summary of information provided and record of consultation:**

- On 14 February 2022, during the course of preparing the EP, 350A self-identified and provided comment on the broader Scarborough development and requested to be consulted on the proposed activity based on the following reasons:
  - 350A's members are affected by the Scarborough development in a number of ways; it has the potential to impact on marine wildlife. 350A needs to be certain the EP has considered impacts from all pollution sources on all potential receptors and has stringent monitoring and pollution response programs.
  - 350A believes the Scarborough development will produce over one billion tonnes of carbon emissions over the next 25 years, adding to WA's emissions and the planet's burden of climate change impacts, and it will accelerate climate change.
- On 25 February 2022, Woodside provided a response to 350A which included advice that Woodside has determined there is no potential for the functions, interests or activities of 350A to be affected by the activities to be carried out under the EP, or the revision of the EP.
  - Woodside advised it will assess the self-identification by 350A and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared.
  - Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 13 January 2022.
  - Woodside invited 350A to provide further feedback on the proposed activity.
- On 10 November 2022, Woodside emailed 350A and shared it is preparing Revision 3 of the SITI EP.
  - Woodside confirmed the activities, location and duration described in Revision 1 of the publicly available SITI EP remain the same, with no material changes.
  - Woodside also noted 350A's interest in whales as they related to the positioning of the Scarborough trunkline and advised an impact assessment for trunkline installation has been carried out in the EP and risks and impacts have been controlled to as low as reasonably practical and acceptable levels.
  - Woodside welcomed any final feedback 350A may have by 24 November 2022 and noted any feedback received after this date will continue to be assessed and responded to, as required, through the life of an EP
- On 17 November 2022, Woodside sent 350A a follow up email
- On 24 November 2022, 350A responded and asked for additional time to provide feedback.
- On 29 November 2022, Woodside responded to 350A's request for additional time to provide feedback and confirmed it was pleased to extend the feedback period.
- On 9 December 2022, 350A responded and thanked Woodside for the opportunity to provide feedback.
  - 350A stated consultation should be undertaken when Revision 3 of the SITI EP is complete and available.
  - 350A requested a full report on JASCO acoustic modelling.
  - 350A requested additional information and commented on Woodside's risk mitigation measures in relation to marine impacts for this proposal, the impact on vulnerable and endangered turtle species, and limiting vessels in the operational area to 6 knots to mitigate impacts on whales.
  - 350A disagreed that the risk and impacts have been controlled to ALARP with respect to whales and turtles.
- On 15 May 2023, Woodside emailed 350A and provided responses to address specific claims and objections in 350A's 9 December 2022 correspondence regarding the proposed activity, summarised as:
  - Woodside advised the next revision of the SITI EP will be made publicly available once accepted by NOPSEMA. Consultation continues through the life of an EP, including during EP assessment and throughout the duration of the accepted EP,
  - Regarding marine impacts and the reports requested, Woodside advised the acoustic modelling results and other pertinent information related to the modelling that has been completed are presented in Section 6.6.6 (acoustic emissions) of the EP. This includes Table 6-12 Summary of animat simulation results for migratory PBW.
  - Regarding insufficient mitigation for the impacts of continuous vessel use on vulnerable and endangered turtle species, Woodside advised Section 6.6.4 (light emissions), 6.6.6 (acoustic emissions) and 6.7.7 (Interaction with marine fauna) in the EP provide a suite of management actions that will be in place to avoid or minimise potential impacts to relevant threatened fauna, and specifically marine turtles, as a result of the Petroleum Activities Program.

- Regarding 350A's suggestion to limit all vessels in the operational area to 6 knots to mitigate adverse impacts to whales, Woodside advises Section 6.8.7 (Interaction with marine fauna) of the EP will provide a suite of management actions that will be in place to avoid or minimise potential impacts to relevant threatened fauna, including whales, as a result of the Petroleum Activities Program. This will include a vessel speed restriction in pygmy blue whale and humpback whale migration BIAs (Biologically Important Areas) during migration periods.
- Regarding risks and impacts not being reduced to ALARP for vulnerable species e.g. pygmy blue and humpback whales, loggerhead and leatherback turtles, Woodside advised it has undertaken a comprehensive assessment, including full justification of the impacts and risks for NOPSEMA to assess in accordance with the Environmental Regulations and NOPSEMA's guidance.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>350A self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity. It expressed concerns relating to:</p> <ul style="list-style-type: none"> <li>• Impacts to marine wildlife from pollution</li> <li>• Carbon emissions and climate change.</li> <li>• 350A asked for additional time to provide feedback.</li> <li>• 350A later provided additional feedback:</li> <li>• Consultation should be undertaken when Revision 3 of the EP is complete and available</li> <li>• 350A requested a JASCO report on marine acoustic impacts</li> <li>• Impacts of vessel use on turtles</li> <li>• Limiting vessel speed in relation to whales</li> <li>• Risks controlled to ALARP for vulnerable and endangered species.</li> </ul>	<p>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.</p> <p>Woodside also noted 350A's interest in whales as they related to the positioning of the Scarborough trunkline and advised an impact assessment for trunkline installation has been carried out in the EP and risks and impacts have been controlled to as low as reasonably practical and acceptable levels.</p> <p>Woodside advised acoustic modelling results and other modelling information are in Section 6.6.6 (acoustic emissions) of the publicly available EP.</p> <p>Woodside advised Section 6.6.4 (light emissions), 6.6.6 (acoustic emissions) and 6.7.7 (Interaction with marine fauna) in the publicly available EP will provide management actions to minimise impacts to fauna, such as marine turtles and whales including a vessel speed restriction in pygmy blue whale and humpback whale migration during migration periods.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside has consulted 350A in the course of preparing this EP. Woodside has assessed the claims or objections raised by 350A. No additional measures or controls have been put in place.</p> <p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on 350A's functions, interests or activities.</p>
<b>The Wilderness Society (TWS)</b>		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with The Wilderness Society (TWS) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p>		

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to TWS on 23 September 2022 based on their function, interest, and activities..
- Woodside addressed and responded to TWS over a 10 month period.

**Summary of information provided and record of consultation:**

- On 21 September 2022, in response to other related Scarborough EP consultation, TWS emailed Woodside seeking an opportunity to meet.
- Between 23 September and 4 October 2022, Woodside and TWS exchanged emails regarding setting up a meeting for 6 October 2022.
- On 30 September 2021, Woodside emailed TWS advising of the proposed activity (Appendix F, reference 2.2) and provided a Consultation Information Sheet.
- 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 Operating Area.
- 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 TWS 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.
    - The route of the Scarborough trunkline, including the position, depth and length.
    - The real-time monitoring of plumes from the seabed intervention and trunkline installation activities, subsequent reporting to the regulator and public sharing - following a quality assurance review, and
    - The absence of blasting and pile driving in the trunkline installation or other proposed activities.
  - In response to questions raised by TWS 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 TWS'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.

<ul style="list-style-type: none"> <li>- In relation to TWS'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.</li> <li>- Woodside noted that no new concerns or queries have been raised by TWS directly to Woodside that have not already been addressed by Woodside in each of the EPs discussed.</li> <li>- Noting TWS's more general interest in carbon offsets, biodiversity and native vegetation, though outside of the scope of the Scarborough Project consultation, Woodside would welcome the opportunity for TWS to meet with subject matter advisers from Woodside to discuss the work that is being undertaken in this space.</li> <li>• On 19 October 2022, Woodside received a letter from TWS addressed to NOPSEMA. The letter referenced the 6 October 2022 briefing but contained comments relating specifically to a separate activity (Scarborough 4D MSS).</li> <li>• On 14 February 2022, TWS emailed Woodside in response to the meeting summary provided by Woodside on 17 October 2022. The response referenced consultation undertaken and contained specific feedback regarding a separate activity (Scarborough 4D MSS).</li> <li>• On 22 February 2023, TWS emailed Woodside to check the feedback sent on 14 February had been received.</li> <li>• On 23 February 2023, Woodside emailed to confirm the feedback had been received.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>Woodside has received feedback from TWS during the course of consultation on a range of Woodside EPs covering the broader Scarborough activities.</p> <p>Feedback was predominantly related to impacts from seismic activities, but broader feedback, objections or claims relating to the proposed activity included:</p> <ul style="list-style-type: none"> <li>• Mitigation of adverse impacts Woodside's activities may have on TWS' functions, interests and activities</li> <li>• Work undertaken to understand marine fauna populations and their migration patterns</li> <li>• Positioning of trunkline</li> <li>• Monitoring of plumes from installation activities</li> <li>• Absence of blasting and pile driving in installation activities</li> <li>• Supported scientific studies</li> <li>• Cumulative impacts</li> <li>• Decommissioning</li> <li>• Engagement with Traditional Owners</li> <li>• Impacts to Zooplankton.</li> </ul>	<p>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.</p> <p>Woodside has outlined its existing processes relating to the topics raised by TWS during consultation.</p> <p>Noting TWS's response on 19 October 2022 and 14 February 2023 contained feedback relating to a separate activity, no further response was required. Woodside has responded to this feedback as part of consultation relating to a separate activity.</p> <p>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.</p> <p>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 <b>Section 7</b>).</p>	<p>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.</p> <p>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.</p>
<b>Say No to Scarborough Gas (SNTSG)</b>		

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Say No to Scarborough Gas (SNTSG) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to SNTSG on 30 September 2022 based on their function, interest, and activities.
- Woodside addressed and responded to SNTSG over a 10 month period.

**Summary of information provided and record of consultation:**

- On 30 September 2022, Woodside emailed SNTSG advising of the proposed activity (Appendix F, reference 1.37) and provided a Consultation Information Sheet. Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the SNTSG public website that addressed the following topics relevant to the proposed activity, where appropriate:
  - Assessment of climate change from activity:
    - Woodside confirmed that the SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the SITI activity (i.e. fuel combustion from project vessels) are considered in Section 6.7.5 of the EP.
  - Trunkline installation through Montebello Multiple Use Zone:
    - The proposed activity will include works through the Montebello Marine Park Multiple Use Zone. In accordance with the North-west Marine Parks Network Management Plan, petroleum activities including transportation of minerals by pipeline, and oil spill response are permissible subject to approval in Multiple Use Zone (IUCN category VI) and Special Purpose Zone Trawl (IUCN category VI).
    - Woodside provided information from Section 6 of the EP relating to impact assessments and impact potential to AMP's. The potential for any mortality in marine fauna as a result of the Petroleum Activities Program is unlikely, highly unlikely or remote.
  - Rock art and Aboriginal cultural heritage:
    - Emissions from the activities covered by the SITI EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program.
    - Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI EP. A summary of this work and its results are provided in Section 4.9.1 of the EP.
    - No rock art will be displaced as a result of the proposed Petroleum Activities Program.
- 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 7 October 2023, Woodside emailed SNTSG a reminder regarding the SITI consultation information sheet previously sent and noted details regarding the upcoming meeting on scheduled for 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 it may take to mitigate any adverse impacts Woodside's activities may have.
- 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 resent the consultation information sheet as SNTSG mentioned it had not yet received it. Woodside confirmed that it emailed SNTSG and sent the consultation information on 30 September 2022.
  - 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 19 October 2022, Woodside received an email from NOPSEMA that was sent to NOPSEMA by SNTSG on 29 September 2022 regarding another EP.
- On 16 November 2022, SNTSG emailed Woodside and included a letter: The letter contained a number of comments, claims and objections relating to the proposed activity covering the following topics / asking the following questions:
  - Community consultation, stating there was no information on which communities and community groups would be consulted. Further, there was no information on what the process would be for incorporating feedback and then re-releasing the EPs. SNTSG asked if Woodside will publish it's redrafted EP's
  - Indigenous peoples and communities have strong cultural and spiritual connections to sites within the EPs and would have an interest in management decisions impacting culturally important oceanic fauna. To what extent are they being consulted? Which communities are being consulted? And how is their feedback incorporated into the EPs?

- Query whether certain groups had been consulted such as Australian Marine Conservation Society and marine tourism operators
- SNTSG were also concerned that work on the project is already well and truly underway, before approvals have been granted, and that parties are acting as though environmental approvals are guaranteed.
- EPs are not consistent with existing conservation plans or ecological principles – including the intergenerational principle and the Blue Whale Conservation Management Plan / threatened species recovery plans
- Independence of participants in Environmental Risk and Impact Identification workshop and the meaning / determinants of ALARP
- Emissions – requests for further information and figures on lifetime emissions of the project, emissions forecasting, consistency with conservation management plans and species recovery plans, Woodsides response to various external reports and sources, CCS and carbon offset planning, emissions projections and Scope 3 emissions.
- Ecosystem impacts such as effects of climate change, ecological parameters used to assess impacts on species / populations etc., the process of the deep-water survey, microbial communities and carrying out work during PBW migration season
- Trunkline and impacts associated with the borrow-ground such as why is a borrow-ground being used instead of onshore rock, long-term impacts to Australian Marine Parks and faunal communities that currently exist on the nearby Pluto trunkline.
- On 15 May 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 re-provided responses it had previously provided to SNTSG on 30 September 2022 based on the claims and objections raised on the SNTSG public website relevant to the proposed activity, where appropriate.
  - Woodside confirmed that during the meeting on 13 October 2022, Woodside provided responses for SNTSG’s queries regarding this EP and the respective proposed activities. As a result of our consultation, Woodside confirmed that the issues raised by SNTSG are addressed in this EP and Woodside remains comfortable the measures proposed in the EP remain appropriate.
  - With respect to climate change, Woodside confirmed concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to this EP. Woodside confirmed the EP assesses both direct and indirect impacts and risks associated with the Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the SITI activity (i.e., fuel combustion from project vessels) are considered in this EP in Section 6.7.5.
  - Relating to Trunkline installation through the Montebello MUZ – Woodside advised the option for selection for the trunkline route is described in Section 4.5.4.5 of the Scarborough OPP
  - Relating to rock art and Aboriginal Cultural Heritage, Woodside advised that emissions from the activities covered by this EP are of a scale and physical remoteness from Murujuga’s rock art that no credible impact pathway is foreseen. No rock art will be displaced as a result of the proposed Petroleum Activities Program. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program. Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by this EP.
  - In response to consultation engagement with SNTSG on 13 October 2022:



- In response to SNTSG queries about movement of the trunkline over its operational life, trunkline backfilling and reasoning for using sand from the borrow ground, Woodside advised that that information on seabed intervention activities is provided in Section 3.9 of the EP. Woodside also provided information on trunkline installation and stabilisation activities, including trenching (pre-lay) and back fill (post-lay). Woodside provided information on borrow ground activities and pointed to Section 3.9.4 of the EP for more information. Woodside advised that Section 4.5.4.6 of the Scarborough OPP 'Post Lay Stabilisation and Protection and Borrow Ground Location' assesses the different trunkline stabilisation options against economic, technical feasibility, safety and environment criteria.
- In response to the question of studies into the impacts of the Pluto trunkline on the marine environment, Woodside referenced Section 6.6.3 of the EP relating to habitats and species present which have been subject to detailed by McLean et al. (2020), McLean et al. (2018), Bond et al. (2018) and McLean et al. (2017). These habitats not only have structural complexity but also create habitat for a large diversity of fish species that commonly occur elsewhere in the NWS but do not occur over soft unconsolidated sediments.
- In response to the letter sent by SNTSG to Woodside on 16 November 2022:
  - 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, 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.
  - 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, 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 that as discussed during Woodside's consultation meeting with SNTSG on 13 October 2022, the Petroleum Activities Program of the EP remains the same as what is included in the Consultation Information Sheets which are updated as required and published on our website and also in the EPs on NOPSEMA's website. EPs are initially published 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 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 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.
  - In relation to concerns that work has commenced before approvals have been granted, Woodside confirmed it has not undertaken any of the activities which are the subject of environment approvals which are currently under assessment.
  - Relating to consistency with existing conservation plans / ecological principles, Woodside advised that the Petroleum Activities Program is carried out in a manner consistent with the principles of ecologically sustainable development (ESD) (as defined in Section 3A of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)). Woodside confirmed during its consultation meeting with SNTSG on 13 October 2022 that proposed activities are consistent with the Blue Whale Conservation Management Plan. Evaluation column and mapping of EPO, Controls and Performance Standards in Table 6-34 in this EP provides the assessment of the relevant activities against the Blue Whale Conservation Management Plan.

<ul style="list-style-type: none"> <li>• Woodside confirmed 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. Woodside referred SNTSG to Section 2.3 of the EP for the risk assessment process.</li> <li>• Woodside referred SNTSG to Sections 2.2 and 2.3 of the EP to address the criteria Woodside uses to determine 'ALARP' for the EP.</li> <li>• Woodside referred SNTSG to Section 6.7.5 of this EP regarding an acceptability statement relating to the impact and risk of emissions relevant to the Petroleum Activities Program. This section discusses Routine Atmospheric Emissions and GHG Emissions including emissions sources relevant to the Petroleum Activities Program, such as use of marine diesel in vessel engines.</li> <li>• Woodside confirmed the EP Recovery Plan and Threat Abatement Plan Assessment identifies applicability of recovery plan and threat abatement plan objectives and action areas, including threatened species such as Marine Turtles, Blue Whales and Sawfish.</li> <li>• Woodside advised that Impacts to all relevant ecological parameters are considered in the risk/impact assessments in Section 6 of the EP.</li> <li>• Woodside referred SNTSG to Section 5.3 'Marine Regional Characteristics of the Scarborough OPP' which describes the Petroleum Activities Program environment including seabed features ground truthing data, marine sediments, water quality and benthic organisms; and references relevant surveys and studies carried out.</li> <li>• Woodside referred SNTSG to Section 4 of the EP which provides information on the habitats and biological communities in the Operational Area.</li> <li>• Woodside referred SNTSG to Section 6.7.6 of the EP which includes an ALARP assessment related to Petroleum Activities Program noise emissions.</li> <li>• Woodside advised it has undertaken a comprehensive assessment, including full justification of the impacts and risks for the regulator NOPSEMA to assess in accordance with relevant Legislation and Regulations.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>Following a briefing with Woodside, SNTSG has provided feedback, objections and claims relating to:</p> <ul style="list-style-type: none"> <li>• Assessment of climate change from activity</li> <li>• Rock art and Aboriginal cultural heritage</li> <li>• Community consultation</li> <li>• EPs are not consistent with existing conservation plans or ecological principles</li> <li>• Independence of participants in Environmental Risk and Impact Identification workshop</li> <li>• Emissions</li> <li>• Lighting</li> <li>• Ecosystem impacts</li> <li>• Trunkline installation, location and impacts, including those associated with the borrow-ground.</li> </ul>	<p>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.</p> <p>Woodside has assessed claims and objections raised on the SNTSG public website that cover topics relevant to the proposed activity, where appropriate and provided responses to SNTSG (shown above).</p> <p>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 <b>Section 5.7</b>).</p> <p>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</p>	<p>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.</p> <p>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.</p>

	<p>and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	
<p><b>Sea Shepherd Australia (SSA)</b></p>		
<p>Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Sea Shepherd Australia (SSA) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Consultation information provided to SSA on 30 September 2022 based on their function, interest, and activities..</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Woodside has provided the SSA with the opportunity to provide feedback over a 10 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 30 September 2022, Woodside emailed SSA advising of the proposed activity (Appendix F, reference 2.5) and provided a Consultation Information Sheet. Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the SSA public website that addressed the following topics relevant to the proposed activity, where appropriate:             <ul style="list-style-type: none"> <li>- Assessment of climate change from activity                 <ul style="list-style-type: none"> <li>• Woodside confirmed that the SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the SITI activity (i.e. fuel combustion from project vessels) are considered in Section 6.7.5 of the EP.</li> </ul> </li> <li>- Trunkline installation through Montebello Multiple Use Zone                 <ul style="list-style-type: none"> <li>• The proposed activity will include works through the Montebello Marine Park Multiple Use Zone. In accordance with the North-west Marine Parks Network Management Plan, petroleum activities including transportation of minerals by pipeline, and oil spill response are permissible subject to approval in Multiple Use Zone (IUCN category VI) and Special Purpose Zone Trawl (IUCN category VI).</li> <li>• Woodside provided information from Section 6 of the EP relating to impact assessments and impact potential to AMP's. The potential for any mortality in marine fauna as a result of the Petroleum Activities Program is unlikely, highly unlikely or remote.</li> </ul> </li> <li>- Rock art and Aboriginal cultural heritage                 <ul style="list-style-type: none"> <li>• Emissions from the activities covered by the SITI EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program.</li> <li>• Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI EP. A summary of this work and its results are provided in Section 4.9.1 of the EP.</li> </ul> </li> </ul> </li> </ul>		

- No rock art will be displaced as a result of the proposed Petroleum Activities Program.
- Marine life and trunkline installation activities
  - Impact assessment for receptors such as marine fauna are provided in Section 6.6 and Section 6.7 of the EP. Impact assessment shows that potential consequence for marine fauna across the potential risks is maximum 'D' (Ref Figure 2-2 in the EP) which is a Minor short-term impact, with the most common consequences being Slight short-term or no lasting effect. Potential for any mortality in marine fauna as a result of the Petroleum Activities Program is unlikely, highly unlikely or remote.
- Pygmy Blue Whale migration BIA
  - The Scarborough Trunkline route passes through the Pygmy Blue Whale migration BIA; an area along the coast from Augusta to Derby which passes along the shelf edge. Impact assessment for trunkline installation through the BIA has been carried out in Section 6 of the EP including Section 6.6.6 Routine Acoustic Emissions and Section 6.7.7 Physical Presence (Unplanned) – Interaction with Marine Fauna.
- Impact to turtle nesting beaches
  - Section 6.6.4 of the EP assesses impact potential from project vessel lighting on turtle nesting beaches. The distance between turtle nesting beaches and the Operational Area at the closest point (6.6 km to Legendre Island and >10km to closest nesting beach on Legendre Island and 14 km to Rosemary Island) are greater than the zone where behavioural impacts from vessel lighting are possible. Therefore, impacts to nesting female turtles, including discouraging females from nesting, or affecting nest site selection and sea-finding behaviour, are not predicted, and females are not expected to be displaced from nesting habitat.
- Woodside extended an opportunity to meet to discuss the proposed activity.
  - On 7 October 2022, Woodside sent a follow up email.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has assessed claims and objections raised on the SSA public website that cover topics relevant to the proposed activity, where appropriate and provided responses to SSA (shown above).</p> <p>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 <b>Section 7</b>).</p>	No additional measures or controls are required.

**Australian Marine Conservation Society (AMCS)**

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Australian Marine Conservation Society (AMCS) for the purpose of 11A(1) is complete. Sufficient information and a reasonable period have been provided, as described in Section 5.5 of the EP. Specifically:

- Consultation Information Sheet publicly available on the Woodside website since August 2021.
- Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to AMCS on 30 September 2022 based on their function, interest, and activities.
- Woodside has provided AMCS with the opportunity to provide feedback over a 10 month period.

**Summary of information provided and record of consultation:**

- On 30 September 2022, Woodside emailed AMCS advising of the proposed activity (Appendix F, reference 2.8) and provided a Consultation Information Sheet. Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the AMCS public website that addressed the following topics relevant to the proposed activity, where appropriate:
  - Assessment of climate change from activity:
    - Woodside confirmed that the SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the SITI activity (i.e. fuel combustion from project vessels) are considered in Section 6.6.5 of the EP.
  - Marine life and trunkline installation activities:
    - Impact assessment for receptors such as marine fauna are provided in Section 6.6 and Section 6.7 of the EP. Impact assessment shows that potential consequence for marine fauna across the potential risks is maximum 'D' (Ref Figure 2-2 in the EP) which is a minor short-term impact, with the most common consequences being slight short-term or no lasting effect.
    - Potential for any mortality in marine fauna as a result of the Petroleum Activities Program is unlikely, highly unlikely or remote.
  - Assessment of light emissions:
    - Routine Light Emissions from Project Vessels are considered in Section 6.6.4 of the EP.
  - Assessment on vessel noise and strikes:
    - The risk assessment on vessel noise and marine fauna is addressed in Section 6.6.6 of the EP. The risks associated with vessel collision with marine fauna during the Petroleum Activities Program are addressed in Section 6.7.2 of the EP.
  - Assessment of impacts on Biologically Important Areas (BIAs) for turtles and other marine fauna:
    - Tables 4-5 and Section 4.6 of the EP list the relevant protected species and habitats or BIAs that overlap the Operational Area and EMBA.
    - Table 4-5 shows that within the Operational Area coral habitats may be present, however mangroves, saltmarsh and seagrass beds are only present within the broader EMBA and thus impact potential would only result from an unplanned marine diesel release due to vessel collision.
    - In addition, potential impacts to BIAs, are described in the impact assessment in Section 6 of the EP.
  - Assessment on marine diesel spill risk:

- Unplanned Activities (Accidents, Incidents, Emergency Situations) from the Trunkline installation and associated activities are assessed in Section 6.7 of the EP. Section 4 of the EP describes the EMBA which 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 marine diesel spill.
  - Ecological impact thresholds used to delineate the EMBA are defined in Section 6.7.1. The worst-case credible spill scenario for this EP is a vessel collision resulting in hydrocarbon release of 2,000 m3 of marine diesel. The EMBA and the size of the worst-case credible spill scenario align with the Scarborough OPP. The EMBA presented does not represent the predicted coverage of any one marine diesel 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.
  - 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 a marine diesel release, to minimise loss of hydrocarbons to the environment.
  - In the unlikely event of a marine diesel release, 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.
- Woodside extended an opportunity to meet to discuss the proposed activity.
- On 7 October 2022, Woodside sent a follow up email.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has assessed claims and objections raised on the AMCS public website that cover topics relevant to the proposed activity, where appropriate and provided responses to AMCS (shown above).</p> <p>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 <b>Section 7</b>).</p>	No additional measures or controls are required.

**██████████, ██████████ and Save Our Songlines**

Woodside has consulted in accordance with Regulation 11A with ██████████, ██████████ and Save Our Songlines (SOS) by providing them with sufficient information and a reasonable period of time and opportunity to make an informed assessment of the possible consequences of the activities on their functions, interests or activities in their individual Traditional Owner and eNGO capacities.

Woodside has addressed each objection or claim made by ██████████, ██████████ and SOS, and has implemented controls in response to topics raised by them during consultation as well as in response to objections and claims they have made. Woodside has consulted ██████████, ██████████ and SOS both individually and together, providing

opportunities for any and all topics relating to their functions, interests and activities – and potential risks or impacts to their functions, interests and activities - to be discussed, including those relating to a fundamental objection to the Scarborough Project as well as those relating, in accordance with indigenous tradition, to spiritual and cultural heritage and values.

For completeness, it is also noted that [REDACTED] and [REDACTED] have also, from time to time, been members of Aboriginal Corporations who have been separately consulted as relevant persons by Woodside.

As demonstrated in the summary below and the consultation record that follows [in Section 5.8], consultation with [REDACTED], [REDACTED] and SOS complies with Regulation 11A and is complete.

### Summary

#### Sufficient information

Woodside has, since at least 2022, provided information to [REDACTED], [REDACTED] and SOS to allow an informed assessment of the possible consequences of the activity on their functions, interests or activities in their Traditional Owner and eNGO capacities. This information has been sufficient to allow an informed assessment of the possible consequences of the activity on their functions, interests or activities. The method of consultation has been informed by [REDACTED], [REDACTED] and SOS' preferences and has included consultation meetings held on Country:

- Since at least 2022, [REDACTED], [REDACTED] and SOS have been provided with and have been made aware of the Environment Plan, Fact Sheets and Information Sheets which set out details of the proposed activity, the location of the activity, the timing of the activity as well as the potential risks and impacts of the activity and on the basis of which [REDACTED], [REDACTED] and SOS could assess any potential impact on their cultural interests. The documents set out the information in various formats that provide many levels of detail – from the fulsome detail provided in the Environment Plan through to summary information and visual diagrams in the Fact Sheets and Information Sheets (written in plain English). Woodside also provided power point slides tailored to topics that [REDACTED], [REDACTED] and SOS have indicated are of interest to them [Ref in particular: Woodside letter 26 August 2022; EDO email 25 July 2023; EDO letter 4 October 2023; Meetings on 25 July 2023; 12 September 2023 and subsequent correspondence]
- Information has been provided to [REDACTED], [REDACTED] and SOS in hard copy as well as electronic format. [REDACTED], [REDACTED] and SOS, through their lawyers confirmed that, for correspondence, electronic format is an appropriate format for the information to be provided [Ref: 12 September 2023 meeting].
- The information in those documents as they relate to the activity description, the location of the activity and the potential risks and impacts of the activity have remained materially the same since the information was first provided in 2022. In some instances, activity scope has reduced and consequently, risks and impacts of the activity have been removed from scope. This has allowed [REDACTED], [REDACTED] and SOS sufficient information in both a high level of detail, in summary format and in a format specifically tailored to topics they have shown interest in, to allow an informed assessment of the possible consequences of the activity on their functions, interests and activities. [Ref: Correspondence to [REDACTED], [REDACTED] and SOS 26 August 2022 and 2 December 2022; Woodside letter to NOPSEMA 17 April 2023; power point slides 25 July 2023, 12 September and 4 October 2023 and meetings on those days and 14 March 2023]
- In addition to the information provided, Woodside has had several meetings with [REDACTED], [REDACTED] and SOS since 2022 on Country and online in accordance with the meeting formats requested by [REDACTED], [REDACTED] and SOS. This EP or issues relevant to it, have been discussed at each of those meetings [Ref: 14 March 2023; 25 July 2023; 12 September 2023; 4 October 2023].
- Woodside has on a number of occasions, confirmed to [REDACTED], [REDACTED] and SOS the purpose of consultation and has provided NOPSEMA's Brochure "Consultation on offshore petroleum environment plans", Guideline "Guideline: Consultation in the course of preparing an environment plan" and Policy "Draft policy for managing gender-restricted information PL2098" [Ref for example: email 15 September 2023].
- In meetings and correspondence:

- ██████████, ██████████ and SOS have confirmed that, since around 2022 they have received and read the Scarborough Project EP materials [most recently: 4 October 2023].
- ██████████, ██████████ and SOS have raised specific issues and displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project. [Ref Woodside 29 March 2023 email; 27 July 2023 email; meetings on 25 July 2023; 12 September 2023; 4 October 2023 ].
- Since around 2022, ██████████, ██████████ and SOS have been represented by the Environment Defenders Office (EDO), a legal team with experience in oil and gas projects and environment plans, who are experienced in representing clients who, in accordance with Indigenous tradition, have cultural and spiritual values.
- ██████████, ██████████ and SOS originally sought to consult on all Scarborough EPs at once and confirmed they have information and “objections” to share on all Scarborough EPs as early as September 2022. From about June 2023, this position changed and ██████████, ██████████ and SOS expressly directed Woodside to consult on individual EPs. Woodside has been ready, willing and able to consult on all Scarborough EPs (including this EP) since consultation commenced and has attempted to do so [i.e. most recently 25 July 2023, 12 September 2023, 4 October 2023,] through the presentation and provision of information on this EP as well as discussion on all EPs.
- Objections, claims and topics relevant to ██████████, ██████████ and SOS and addressed by Woodside, were initially focused on Murujuga and included a focus on land-based impacts to Murujuga rock art, removal of Murujuga rock art, air emission impacts on Murujuga rock art, restriction to sites on the Burrup Peninsula and to plants and animals of Murujuga [Ref letter to Woodside 6 June 2022; letter to NOPSEMA 26 September 2022]. More recently, their focus has shifted to an interest in Sea Country and marine plants and animals [Ref for example Second ██████████ Affidavit dated 7 September 2022]. As of mid-September 2023, they have identified Rosemary Island (near the Burrup Peninsula, and not near the EMBA or operations area) as being a place of particular cultural significance. Notably, the Second ██████████ Affidavit dated 7 September 2023 stated that ██████████, ██████████ and SOS have information to share with Woodside and this information “needs to be shared at the appropriate place, namely on Country”. However, the Second ██████████ Affidavit did not identify Rosemary Island as being a culturally significant location or the only location at which that information could be shared with Woodside.
- Objections, claims and topics have been unclear or inconsistent in some instances – in one meeting ██████████ indicated her concern was *not* pygmy blue whales (a focus of EP noise controls due to PBW distribution and behaviour) but humpback whales [12 September 2023]. At the next meeting, Woodside was criticised for reflecting a position that humpback whales were a topic of specific interest to ██████████, ██████████ and SOS [4 October 2023]. Generally speaking, ██████████ has stated that whales carry important songlines, the whale Dreaming, and connection between land and sea [Second ██████████ Affidavit dated 7 September 2023]. The EP contains several controls to manage potential risks and impacts to whales to ALARP and acceptable levels.
- Throughout consultation, it has been made clear to Woodside that ██████████, ██████████ and SOS hold a fundamental objection to the Scarborough Project and their preference is for the Scarborough Project to be stopped [Ref: 14 March 2023; 12 October 2023 meetings; SOS website].
- Throughout consultation, ██████████, ██████████ and SOS have continued to state that they have further information they wish to tell Woodside and that they say Woodside requires for its Environment Plans. However, despite Woodside offering ample opportunities for consultation, including online and in person on Country, ██████████, ██████████ and SOS have expressly refused to provide that information to Woodside [Ref 17 April 2023 letter and most recently 4 October 2023 meeting].
- On a number of occasions, ██████████, ██████████ and SOS have declined to provide the information to Woodside but have been prepared to provide the information publicly [Affidavits of ██████████ September 2023] or offered to provide the information to others [Ref: letter to NOPSEMA 26 September 2022; letter to NOPSEMA 4 October 2023].
- Woodside has attended all meetings in listening mode to hear from ██████████, ██████████ and SOS and also in presentation mode, ready, willing and able to present and provide information on the activities proposed under the Environment Plan as well as on the broader Scarborough Project. In those meetings, Woodside has listened to items and topics raised by ██████████, ██████████ and SOS and has prepared and brought material in the form of presentations, tables, maps and video to share with ██████████, ██████████ and SOS. [Ref meetings on 14 March 2023; 25 July 2023; 12 September 2023; 4 October 2023 and presentations prepared for those meetings]



- During meetings, Woodside has discussed with ██████████, ██████████ and SOS, the controls Woodside has in place to manage topics relating to potential impacts and risks relating to spiritual and cultural connections and values that Woodside understands are relevant to ██████████, ██████████ and SOS. Woodside has also attended ready, willing and able to answer questions and provide additional information as appropriate and when requested. In a number of instances, despite confirmation that Woodside would present on all of the activities under the Scarborough Project, ██████████, ██████████ and SOS expressly told Woodside that they did not want to hear from Woodside on the Scarborough project activities and instead directed Woodside to only discuss or present on specific aspects of each Environment Plan. Despite that direction, at some of those meetings, ██████████, ██████████ and SOS raised queries that related more broadly to other activities in the Scarborough Project. Woodside provided responses and information in relation to those questions [Ref: meetings and following correspondence on 14 March; 25 July; 12 September; 4 October 2023].
- As part of consultation, Woodside has also taken time to show ██████████, ██████████ and SOS how the information ██████████, ██████████ and SOS have provided during consultation has been incorporated into the EPs and how Woodside has proposed control measures to manage potential impacts and risks to topics Woodside understands are relevant to them, including to request any input by ██████████, ██████████ and SOS into the proposed control measures or any other available measures. ██████████, ██████████ and SOS have provided input in some cases and have otherwise expressed views in relation to the control measures. In some instances, in response to queries seeking their views, ██████████, ██████████ and SOS have explicitly stated that they do not have any views to share with Woodside on the control measures. [12 September; 4 October meetings]
- In a number of instances, ██████████, ██████████ and SOS have indicated an impossibility to provide information to Woodside – in that they cannot yet, or that it is not possible to provide the information. For instance they have made statements to Woodside to the effect that there is information that they *do not yet know* and that they *don't know when they will know* (for example, information that the Murujuga rocks have not yet disclosed to them) [Ref 14 March 2023] or information that they will find out from animals who speak to them [Second ██████████ affidavit Sept 2023 para 11] as well as information that comes to them from time-to-time in visions [12 September 2023].
- During consultation, consistent with NOPSEMA's guidance and suggestions, Woodside has asked ██████████, ██████████ and SOS on a number of occasions whether there are other individuals who ought to be consulted. ██████████, ██████████ and SOS have made various references to MAC. In some instances, ██████████, ██████████ and SOS did not provide an answer [Email to EDO 3 August 2023 and EDO response 9 August 2023]. Most recently, ██████████, ██████████ and SOS stated words to the effect that "it is not [their] responsibility to identify relevant persons on Woodside's behalf and to distribute information to them". Consultation with ██████████, ██████████ and SOS has not otherwise identified any other groups or individuals who, in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity, or whom may have other communally held functions, activities or interests. [Ref example: Woodside email 15 Sept 2023 email; EDO email 19 September 2023].
- In correspondence and meetings, Woodside has questioned what it has perceived to be a general refusal by ██████████, ██████████ and SOS to provide information to Woodside, including at meetings where ██████████, ██████████ and SOS had confirmed they would provide information [25 July 2023; 12 September 2023; 4 October 2023].
- Throughout consultation, ██████████, ██████████ and SOS have expressed a general dislike and mistrust of Woodside and a reluctance to provide Woodside with information, stating most recently words to the effect: "I don't trust any of you. There is no trust here, trust me lady, there is nothing" [Ref 4<sup>th</sup> October 2023 meeting].
- Given those circumstances, and with a genuine concerted aim of attempting to manage potential impacts and risks to ██████████, ██████████ and SOS and to more broadly understand their functions, interests and activities, as well as topics that might relate to a fundamental objection to the Scarborough Project and in accordance with Indigenous tradition, ██████████, ██████████ and SOS' potential spiritual cultural and connections and values; Woodside has reviewed publicly available information. This has included reviewing ██████████ statement made to the Commonwealth Senate Standing Committee on Environment and Communications [Ref Opening Statement from ██████████, ██████████ Murujuga Aboriginal Corporation – Public Hearing, Perth – 20 April 2017], information provided by ██████████, ██████████ and SOS on their SOS website, submissions made by ██████████, ██████████ and SOS to various Commonwealth government bodies [Ref: February 2022 and 19 October 2022 s10 ATSIHP Act applications] the United Nations [Ref: UN letter 22 September 2022], the Woodside Board [Ref June 2022], various government bodies [Ref NOPSEMA letters including 22 September 2022], at Annual General Meetings held by Woodside [Ref transcript Question time 19 May 2022], in proceedings against NOPSEMA and

Woodside in the Federal Court [Ref ██████ Affidavits dated August and September 2023] and in various Appeal Convenor processes. Topics, claims and objections in that information have been included in the EP where relevant and in brief, provide the following insights:

- Information set out in the publicly available information shows that ██████, ██████ and SOS have an understanding of the Scarborough Project and the activities involved in the Scarborough Project and this EP.
- ██████ has expressed a view that MAC holds the key responsibility for the stewardship and management of the Land and Sea Country according to the Aboriginal Lore and Culture; MAC's work includes collecting environmental and heritage records to assist with compiling data [building a library] relevant to Law and Culture on sacred sites, including 42 islands of the Dampier Archipelago; MAC has been embraced by the community as the body for cultural knowledge and guidance which allows the community to speak with one spiritual and cultural voice and with strong cultural integrity. This means that some decisions or advice given by individuals previously, may not reflect the current and more valid cultural leadership that governs today [Ref: 20 April 2017 Opening Statement]. This position is at odds with the position being put forward by ██████, ██████ and SOS in consultation with Woodside.
- ██████, ██████ and SOS hold a fundamental objection to the Scarborough Project [for example: SOS website]
- On a number of occasions, ██████, ██████ and SOS have declined to provide the information to Woodside and have instead provided information publicly [Affidavits of ██████ September 2023] or offered to provide the information to others [Ref: letter to NOPSEMA 26 September 2022; letter to NOPSEMA 4 October 2023]

#### Reasonable period of time

- ██████ is a former member of MAC. Woodside's engagement and correspondence with ██████ (as a MAC representative) date back an extended period to when discussions on the Scarborough Project commenced with MAC in around June 2018.
- Woodside has been consulting specifically with ██████, ██████ and SOS on the Seismic EP since at least July 2022 D&C EP since at least September 2022 and SIT EP since around August 2022.
- ██████, ██████ and SOS have recently confirmed that consultation commenced in at least 2022 [Ref: 4 October 2023 letter]. This represents a consultation period that spans over 1 year which on an objective analysis fulfills Woodside's obligation to provide a reasonable period of time for consultation.
- Woodside has accommodated ██████, ██████ and SOS's initial consultation requests for at least 4 weeks [Ref 8 November 2022 letter] and then, later in the consultation, requests for 6 weeks [Ref EDO letter 24 March 2023] between consultation meetings to enable them to provide information they wish to share.
- ██████, ██████ and SOS have been made aware of the Scarborough Project and desire by Woodside to commence activities under each EP. Since at least August 2023, ██████, ██████ and SOS have been made aware that commencement of activities under the Scarborough Project is imminent and that, if they would like Woodside to consider their information prior to commencement of activities, they needed to provide any and all information to Woodside imminently [Ref: 15 Sept 2023; August 2023; Federal Court proceedings]
- Woodside notes the assertion by ██████, ██████ and SOS, through their legal representatives, that consultation is 'in its early stages' [Ref: EDO letter 10 August 2023]. This statement is contrary to the history of consultation, and to their recent confirmation that consultation indeed commenced in at least 2022 [EDO 4 October 2023 letter].
- Having regard to the timeframe provided by Woodside for consultation, the history of engagement between Woodside and ██████, ██████ and SOS and the transparency with which Woodside has communicated timeframes for consultation, Woodside has provided ██████, ██████ and SOS a reasonable period for consultation.

#### Reasonable opportunity

- ██████, ██████ and SOS have been provided a reasonable opportunity to consult in relation to this EP and all of the Scarborough EPs.

- There is a large body of correspondence, email and text messages which show Woodside's continual offers for consultation meetings for over a year. It is noteworthy that despite around 9 months of offers and attempts by Woodside to meet with ██████████, ██████████ and SOS (from around June 2022 – March 2023) a meeting only first took place at Hearson Cove in March 2023.
- There have been at least six instances where Woodside has attended an agreed meeting venue on an agreed date, ready, willing and able to consult in person with ██████████, ██████████ and SOS. ██████████, ██████████ and SOS attended most agreed meetings, but otherwise failed to attend or refused to attend [11 October 2022; 14 March 2023; 25 July 2023; 12 September 2023; 4 October 2023; 5 October 2023]
- Since 2022, Woodside has expressed a willingness and openness to consult at any time and having regard to ██████████, ██████████ and SOS' preferred consultation methods [Ref: Allens letter 21 August 2023]. To further support the consultation process, Woodside also offered to engage in fortnightly meetings with ██████████, ██████████ and SOS. This offer was declined. [Ref 25 July 2023 meeting; Woodside email 27 July 2023; EDP email 9 August 2023]
- Woodside has respectfully accommodated delay to meetings or rescheduling of meetings where ██████████, ██████████ and SOS have requested that to occur.
- Woodside has agreed with requests from ██████████, ██████████ and SOS in relation to meeting protocols. This has included significant efforts by Woodside to accommodate ██████████ and ██████████ cultural requests by allocating female subject matter experts to prepare and attend meetings with ██████████, ██████████ and SOS where matters are otherwise managed by male subject matter experts for Woodside.
- Upon request from ██████████, ██████████ and SOS, Woodside has also nominated a specific woman at Woodside who is able to receive culturally sensitive information on behalf of Woodside. Despite this, ██████████, ██████████ and SOS have declined to provide this information. [Ref Woodside email 28 February 2023]
- During the consultation, ██████████, ██████████ and SOS have stated that they will provide information to Woodside by way of video and that had just finished "one big dreaming story" [transcript 25 July 2023 meeting]. [Ref emails from EDO 15 July 2023; 9 August 2023] Woodside waited for that information to be provided, only to be told at a later date that no video will be provided [Ref EDO emails post 25 July meeting; Woodside email 29 August 2023; EDO email 4 September 2023].
- During the consultation, ██████████, ██████████ and SOS have informed Woodside, and made public statements that they have further information they want to provide to Woodside for its Scarborough Environment Plans [Second ██████████ Affidavit dated 7 September 2023]. Notwithstanding numerous opportunities, ██████████, ██████████ and SOS have not provided any further information to Woodside. At the last meeting in October, ██████████ and SOS did not present Woodside with any viable way to receive the information when Woodside informed ██████████ and SOS that its employees were unable to attend consultation at Rosemary Island for cultural protection and safety reasons.
- Until around 12 September 2023, Woodside was told by ██████████, ██████████ and SOS that their preference was to meet at Murujuga [Ref 8 Nov 2022 letter]. It was previously suggested that Hearson Cove on the Burrup Peninsula in the Pilbara was ██████████, ██████████ and SOS' preferred on-Country location to share culturally sensitive information with Woodside [February 2023]. Woodside has confirmed on a number of occasions its willingness to attend on-Country to consult with ██████████, ██████████ and SOS at that location.
- In the meeting on 12 September 2023, ██████████ indicated that the preferred location was Rosemary Island and that Woodside would need to make arrangements (including chartering a boat) in order for ██████████, ██████████ and SOS to share information. This was the first time that ██████████, ██████████ had requested to consult at Rosemary Island. Woodside agreed to investigate arrangements to meet on Rosemary Island and proceeded to contract a vessel, at short notice, to take 6 people to Rosemary Island for the meeting and offering ██████████ an opportunity to bring with her, 3 support people on the vessel. ██████████ provided a list of 8 people (including 3 lawyers and men, after indicating the island was a women's island and the story to be shared there was women's business) and demanded that Woodside, at short notice, charter a larger vessel to accommodate that additional number of people. While investigating arrangements for the meeting, it was made clear to Woodside from other Traditional Owner groups that Woodside did not have cultural permission or spiritual protection to convene a meeting on Rosemary Island. When that information was communicated to ██████████, ██████████ and SOS, ██████████ expressed disappointment. A compromise was initially agreed involving Woodside chartering a vessel to

circumnavigate Rosemary Island so that [REDACTED] and SOS could provide information to Woodside. When Woodside confirmed it could arrange this at short notice, [REDACTED] withdrew the agreement and cancelled the meeting and declined to provide information to Woodside.

- During the 4 October 2023 meeting, [REDACTED] indicated there is broader community misalignment and difference on topics and information being presented by [REDACTED], [REDACTED] and SOS and [REDACTED] expressed some emotion in relation to discussing those differences with the various members of the community. From the meeting and the way the message was delivered, Woodside staff apprehended that there is potential for physical and verbal exchanges between community members. Woodside considers it is not appropriate for Woodside to consult further on these issues in circumstances where Woodside will be brought into community cultural disagreements. It is also not appropriate for Woodside to expose its employees to behaviours and situations where psychosocial safety is not guaranteed, and that put the health and safety of those employees at risk, including mental and emotional health and wellbeing.

#### Consultation capacities

- [REDACTED], [REDACTED] and SOS have been consulted in their individual traditional owner and eNGO capacities. Notably:
  - [REDACTED], [REDACTED] and SOS have been consulted in their capacities as eNGOs who have a fundamental objection to the Scarborough Project and seek to pause or stop the Scarborough project or “Stop Scarborough Gas” [Ref for example SOS website; 14 March 2023 meeting; 4 October 2023 meeting].
  - [REDACTED] has indicated she is a Kuruma Mardudhunera woman and [REDACTED] has indicated she is a Mardudhunera woman. Woodside has consulted with the Kuruma and Mardudhunera people including through consultation with MAC, Wirrawandi Aboriginal Corporation (**WAC**), Ngarluma Aboriginal Corporation (**NAC**) and Robe River Aboriginal Corporations. Both [REDACTED] and [REDACTED] have been consulted in their capacities as Traditional Custodians of Murujuga in so far as their interests relate, in accordance with indigenous tradition, to spiritual and cultural heritage and values. Further, the results from an ethnographic heritage assessment undertaken for the Scarborough Project development footprint identified no ethnographic sites, values or traditional interests relevant to this EP or the Scarborough Project [Ref MAC consultation]
- As to individual interests,
  - Woodside has addressed in this EP, topics expressed to be of interest to [REDACTED] and [REDACTED]. Controls that Woodside has either updated or implemented as a result of consultation with [REDACTED] and [REDACTED] have been discussed with them and their views have been provided on them.
  - [REDACTED] has been invited to all consultation meetings and has been provided opportunity to consult. Despite this, she has not engaged in consultation in person since 25 July 2023 and, despite being invited, did not attend consultation meetings on 12 September or 4 and 5 October. Woodside has made enquiries directly to [REDACTED] by email, phone calls and text messages and has sought confirmation from [REDACTED] and the lawyers Woodside understood were acting for [REDACTED]. [REDACTED] has declined to attend meetings.
  - During correspondence, in Court affidavits and at meetings with [REDACTED] and [REDACTED] (in so far as [REDACTED] attended those meetings), [REDACTED] and [REDACTED] have expressed a deep and emotional interest in topics they have covered. They have provided information to Woodside about “visions” that come to them individually [Ref for example 14 March and 12 September 2023 meetings], information that comes to them from ancestors from the grave [Ref for example 4 October meeting] messages that are communicated to them individually from Murujuga rocks [Ref for example 14 March 2023 meeting] and to their ability to listen and speak on behalf of all plants and animals [REDACTED Affidavit 7 Sept 2023]. Stories about songlines have been communicated to Woodside as being “my stories” and songlines have been expressed as being personal, as expressed in consultation [for example 4 October 2023]. Songlines have also been expressed to Woodside as having been recent and individually held, rather than ancient, group songlines, passed down in community [25 July 2023 meeting]. For example, [REDACTED], [REDACTED] and SOS expressed words to the effect that the whales is a “big dreaming story [they] just finished” [25 July 2023 meeting]. This may have been what was referenced as a being a first proposed response by video of storytelling generally and of storytelling on country [Ref EDO emails 25 July 2023 and 9 August 2023]. [REDACTED], [REDACTED] and SOS later declined to provide the videos. In addition, a whale songline was expressed to Woodside as having been recently envisioned by [REDACTED]

when she was doing certain activities at a recent visit to Rosemary Island [Ref for example 12 September and 4 October meetings – sensitive woman's only information]. Information has been expressed along the lines of being "my story", "my songline" [Ref 12 September and 4 October 2023 meetings].

- In circumstances where it has been expressed to Woodside that these stories and interests are deeply personal and personally emotionally connected to ██████████ and ██████████, they are interests that are individual. They have not been expressed by ██████████ and ██████████ as being stories or connections that are communal or are held by traditional owner groups. Indeed, other traditional owner groups consulted by Woodside have indicated a position to the effect that it is very unlikely that cultural stories and values can be known only to individuals within a community. This is consistent with the sentiment expressed in ██████████ statements from 2017 when she was on the Board of MAC to the effect that "MAC has been embraced by the community as the body for cultural knowledge and guidance which allows the community to speak with one spiritual and cultural voice and with strong cultural integrity... [A]dvice given by individuals ... may not reflect the current and more valid cultural leadership ... [of MAC]". Ethnographic surveys undertaken by traditional owner groups, as well as continuing engagements with those groups, have similarly indicated there are no specific values and interests at risk of harm in the operational area or EMBA for this EP. In these circumstances, the interests conveyed by ██████████ and ██████████, while respected by Woodside appear to be individual interests and presented in an individual capacity, rather than interests held by a community.
- Consistent with the indications from other traditional owner groups, Woodside is not aware of any other individual interests of this nature (and no other individual First Nations persons have indicated to Woodside that they have any such individual or personal interests).
- Consistent with this position, ██████████, ██████████ and SOS have expressly stated to Woodside that their views and positions differ from that of MAC and other elders. In addition, Woodside has received communications, strong warnings and information from authorised traditional owner groups expressing a view that ██████████, ██████████ and SOS do not speak for them and ██████████, ██████████ and SOS views are not held by the communities. [Ref for example, letter from Allens to EDO dated 21 August 2023; emails from Woodside 3 October 2023]

#### **Conduct in consultation**

- The process of consultation has limits. It is a statutory obligation that must be understood in a practical and reasonable way so that it is capable of performance. It cannot be one that is incapable of being complied with within a reasonable time. The consultation scheme must operate in a way that a Titleholder will be able to, with reasonable diligence, discharge its obligation to consult. The consultation obligation is an obligation that must be capable of practical and reasonable discharge by the person upon whom it is imposed.<sup>1</sup> Consultation does not require consent<sup>2</sup>. In carrying out consultation, Titleholders are not required to wait indefinitely for a response.<sup>3</sup>
- During consultation, ██████████, ██████████ and SOS have made serious statements including that Woodside has caused delays in meetings, has misrepresented information, is disrespectful, discriminatory and has breached protocols. In each instance, Woodside has expressed concern that ██████████, ██████████ and SOS have formed these perceptions of consultation, and Woodside has taken time to address and clarify the issue in each instance. Despite challenging circumstances, Woodside personnel have maintained professionalism and integrity in genuine efforts to consult with ██████████, ██████████ and SOS during all consultation efforts, which have been occurring since at least 2022.
- Woodside has demonstrated a genuine openness to consult, provide and listen to information. In most instances, meetings have opened and closed amicably but, during the progress of the meeting, Woodside employees have often been subjected to hostile, offensive language and behaviours, placing unacceptable strain on Woodside personnel. This includes recent demands to meet on Rosemary Island, where cultural safety concerns were raised by the recognised traditional custodians. Woodside does not consider these outcomes to be aligned with the consultation requirement. In circumstances where Woodside has fulfilled its obligations under reg 11A, Woodside does not consider it appropriate to continue to consult further with ██████████, ██████████ and SOS including because of these risks.
- Finally, Woodside has made clear to ██████████, ██████████ and SOS that consultation is not to be used by parties as a mechanism to stall and delay approvals [Ref: Woodside 17 April 2023 letter], especially in circumstances where parties (as in this instance) have publicly stated a fundamental objection to the Scarborough project and stated publicly an aim including one which is to stop or pause the Scarborough Project.

#### **Consultation is complete**

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- Consultation under Reg 11A is complete because sufficient information, a reasonable period of time and reasonable opportunity have been provided to ██████████, ██████████ and SOS in their individual Traditional Owner and eNGO capacities.
- The fact that relevant persons have requested further consultation does not mean that Woodside has not met its obligations under reg 11A. This is underscored in the current circumstances where further consultation is not reasonable and is not required in order to comply with reg 11A:
  - persons being consulted have stated they have additional information they wish to share with Woodside for Woodside's EPs [Ref Federal Court proceedings] but then declined to share this information.
  - persons being consulted have stated that information has not yet been revealed to them, is not yet known to them, it will be revealed 'in time', but also they do not know when it will be revealed to or known by them (for instance where the wisdom of Murujuga rocks have not yet spoken to them; when animals have not yet provided information to them or where they at various times, receive information in visions) [Ref meetings on 14 March 2014 and 12 September 2023; ██████████ Affidavit dated 17 August 2023]
  - persons have affirmed that information about certain matters can only be disclosed to people "born as biological female and living as a female in accordance with their beliefs and customary practices" [Ref ██████████ Affidavit 7 Spet para 12]
  - further consultation exposes Woodside employees to unacceptable risk – including psychosocial, health and safety risk.

In all of the circumstances, consultation under Regulation 11A has been completed and Woodside has met its obligations under Regulation 11A.

**Summary of information provided and record of consultation :**

- Woodside understands:
  - ██████████ is a Karuma Mardudhunera woman and a traditional custodian of Murujuga
  - ██████████ is a Mardudhunera woman and a traditional custodian of Murujuga
  - Save Our Songlines is an organisation formed by ██████████ and ██████████.

Historical Engagement

2017 – 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, Wirrawandi Aboriginal Corporation and Ngarluma Aboriginal Corporation.

Woodside understands ██████████ was a member of MAC since inception, was the ██████████ of MAC between 2016 and 2017 and was a board member of MAC until 11 February 2022, and took part in discussions between Woodside and MAC on the Scarborough Project. During these two-way engagements, in the three years leading up

<sup>1</sup> Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 at [136], [138], [89], [95]

<sup>2</sup> F2023L00998ES Explanatory Statement issued by the authority of the Minister for Resources OPGGS (E ) Regulations page 28

<sup>3</sup> F2023L00998ES Explanatory Statement issued by the authority of the Minister for Resources OPGGS (E ) Regulations page 30

to 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.

While a member of MAC, [REDACTED] expressed a view that MAC holds the key responsibility for the stewardship and management of the Land and Sea Country according to the Aboriginal Lore and Culture; MAC's work including collecting environmental and heritage records to assist with compiling data [building a library] relevant to Law and Culture on sacred sites, including 42 islands of the Dampier Archipelago; MAC has been embraced by the community as the body for cultural knowledge and guidance which allows the community to speak with one spiritual and cultural voice and with strong cultural integrity. This means that some decisions or advice given by individuals previously, may not reflect the current and more valid cultural leadership that governs today [Ref Opening Statement from [REDACTED], [REDACTED] Murujuga Aboriginal Corporation – Public Hearing, Perth – 20 April 2017].

The first time Woodside became aware of [REDACTED], [REDACTED] and SOS' concerns regarding the Scarborough Project was via a number of public statements on the Save Our Songlines websites and social media (November 2021).

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

- On 15 December 2021, Woodside held a meeting at the MAC office in Dampier with the MAC Board (including [REDACTED]) and Circle of Elders, to provide an overview of the Scarborough and Pluto Train 2 projects. (Evidence of this meeting supplied with the MAC correspondence in the Traditional Custodian part of this Table).
- In February 2022, [REDACTED] and [REDACTED] wrote to the (then) Federal Environment Minister requesting an assessment under s10 of the Aboriginal Torres Strait Islander Heritage Protection Act 1984 (Cth) regarding "threats to the Murujuga Aboriginal heritage posed by proposed Scarborough LNG..." (2). This letter cited potential damage to Murujuga rock art due to industrial activity on the Burrup Peninsula and climate change. The letter also claimed that members of MAC had been subject to a "gag clause"(3).
- On 21 March 2022, [REDACTED] and [REDACTED] sent an email addressed to the Woodside [REDACTED], requesting a meeting with Woodside on the morning of 21 March 2022
- On 24 March 2022, there was an attempted virtual meeting over Microsoft Teams between Woodside, [REDACTED], [REDACTED] and [REDACTED]. On the same day Woodside emailed [REDACTED], [REDACTED] and SOS:
- 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 SOS have set out, and that Woodside remained available to meet.
- On 24 March 2022, [REDACTED], [REDACTED] and SOS also 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 Woodside's offer to hold further meetings. By this stage, there had been four attempts by Woodside to meet and discuss issues with [REDACTED], [REDACTED] and SOS. This was in addition to the previous three years of consultation with [REDACTED] and [REDACTED] via MAC.
- On 6 June 2022, some seven months after SOS had launched its public campaign on social media, [REDACTED], [REDACTED] and SOS wrote to the [REDACTED] of Woodside regarding consultation on the NOPSEMA assessment of Scarborough offshore gas field development. The letter contained the following:

- Industrialisation of our globally significant Murujuga cultural landscape is causing impacts on rock art through pollution, physical displacement of rock art which is highly significant within our ongoing system of Aboriginal Law and culture, damage to other heritage sites, and restriction of access to sites of cultural and spiritual significance. These impacts on our cultural heritage will all be further exacerbated by the Scarborough gas developments and related activities. After being preserved and respected for at least 50,000 years of continuous cultural and spiritual practice, Traditional Owners and Custodians are now seeing this degradation occur within our own lifetimes. As a result, industrial activity on the Burrup is already impacting our ability to practice cultural traditions and pass on our culture to future generations in accordance with our cultural obligations.
- We assert our rights to be consulted as 'relevant persons' in relation to cultural heritage impacts of the Scarborough gas development according to the OPGGS (E) regulations. [This relates to cultural values that are nationally protected as part of the *Dampier National Heritage Place* and values yet to be described as part of the proposed World Heritage Listing for the Burrup Peninsula and surrounds] (4)
- 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. (5)
- 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. (5)
- In order to comply with requirements to consult under the regulations, disclosure of certain information is required from Woodside.
- 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.
- Impacts to heritage values and other potential impacts associated with the Scarborough gas development must be understood and assessed with reference to the cultural practices, beliefs and customs and unique understanding of these issues held by Murujuga's traditional knowledge holders.
- The Murujuga Aboriginal Corporation does not represent the interests of Traditional Owners seeking to protect cultural heritage (6) 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.
- Woodside notes that in the opening paragraph of this letter [REDACTED] and [REDACTED] state that they are Murujuga Elders, Traditional Owners, Traditional Custodians and members of the Murujuga Aboriginal Corporation (MAC). MAC was established to preserve and protect the land, heritage and culture of the Burrup and Maitland Industrial Estate and is made up of a Circle of Elders who hold cultural authority and consist of representation from the 5 language groups.
- 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'.
- On 22 July 2022, Woodside responded to the 6 June letter sent by [REDACTED] and [REDACTED]. The letter largely related to the Seismic Survey EP, but also stated that Woodside 'is open to receiving feedback and to discussing issues raised in relation to each of its Scarborough Environment Plans'.
- 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 accepted this invitation, including outlining payment for [REDACTED] and [REDACTED] time. The proposed meeting did not progress because of a lack of response from [REDACTED] and [REDACTED].
- On 2 August 2022, Woodside wrote to NYFL accepting NYFL's offer to facilitate SOS meetings.
- On 26 August 2022, Woodside wrote to [REDACTED] and [REDACTED] and SOS providing an information sheet and link to the EP. The letter confirmed ethnographic surveys undertaken of the pipeline route concluded that the pipeline route is likely to have "low to nil" impacts to indigenous archaeological values across the project footprint. It noted that risks and impacts from onshore processing of gas are not related to this EP and will be evaluated in relevant EPs



- On 26 September 2022, [REDACTED], [REDACTED] and Save Our Songlines emailed a letter to NOPSEMA regarding a number of Scarborough EPs, including this one:
  - [REDACTED], [REDACTED] and Save Our Songlines raised several issues relating to Woodside’s consultation requirements under the Regulations.
  - [REDACTED], [REDACTED] and Save Our Songlines stated that they have functions interests and activities within the EMBA’s of the Scarborough EPs (including this EP) which might be directly affected by the proposed activity.
  - [REDACTED], [REDACTED] and Save Our Songlines requested that NOPSEMA refrain from accepting the Scarborough EPs until Woodside had properly complied with Reg 11A in relation to their functions, interests and activities and in relation to the time provided for consultation.
  - [REDACTED], [REDACTED] and Save Our Songlines offered to provide to NOPSEMA, further information about their functions, interests and activities that may be affected by activities under the Scarborough EPs.
  - Information to be shared by Save Our Songlines is to be treated with high sensitivity and confidentially (7).
  - The letter stated that Woodside had not provided a “reasonable opportunity to provide our objections in relation to the Trunkline and Drilling EPs, and therefore cannot have responded to those objections”. (8)
  - [REDACTED] and [REDACTED] offered to share information about their functions, interests and activities regarding these EPs to NOPSEMA (9). This is an indication that as early as September 2022, [REDACTED] and [REDACTED] had information and “objections” to share about all Scarborough EPs which, despite Woodside providing ample opportunity, they had not shared with Woodside.
- 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] and Save Our Songlines contacted Woodside via phone to advise that [REDACTED] 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 or 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 flew personnel to Karratha to attend the meeting with [REDACTED], [REDACTED] and SOS and followed up with [REDACTED], [REDACTED] and Save Our Songlines via phone and SMS.
- On 11 October 2022, [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, despite Woodside being ready in Karratha for the meeting as agreed, this meeting did not proceed.
- ☐ None of ██████████, ██████████, or SOS provided an explanation to Woodside as to their non-attendance at this meeting.
- On 8 November 2022, ██████████, ██████████ and Save Our Songlines sent a letter to Woodside in relation to the Scarborough gas project EP meetings request including this EP.
  - ██████████, ██████████ and Save Our Songlines acknowledged Woodside's correspondence of 29 September 2022 and 6 October 2022 in respect of Woodside's consultation with relevant persons for activities related to the Scarborough Project and associated EPs. Acknowledging their understanding that Woodside's correspondence encompassed all activities with the Scarborough Gas Project including Seismic, D&C, SITI and State EPs and of the forthcoming Subsea EP.
  - ██████████, ██████████ and Save Our Songlines reiterated that they were relevant persons for activities relating to these EPs and acknowledged the invitation to meeting to discuss the EPs and the answer any questions they may have.(4)
  - ██████████, ██████████ and Save Our Songlines stated that it was unfortunate that they had been unavailable to meet as requested, however they welcomed the opportunity to discuss their letters dated 6 June 2022 and 26 September 2022 and their concerns on the impacts and risks of the above activities. They acknowledged that Woodside may have an internal target date but that it was generally not practicable to arrange meetings with less than 4 weeks' notice and requested that Woodside provide sufficient notice for any meeting opportunities.
  - ██████████, ██████████ and Save Our Songlines offered several dates on which they were available to meet and shared their preference to meet on Murujuga.
  - ██████████ and ██████████ wrote to Woodside, stating "Unfortunately we have been unavailable to meet as requested..." but that "we acknowledge your invitation to meet... to discuss the Scarborough EPs and to answer any questions we may have" and that ██████████ and ██████████ "welcome the opportunity to discuss our letters of 6 June 2022 and 26 September 2022 and our concerns as to the impacts and risks of the above activities" (being the Seismic EP, Trunkline EP, Drilling EP and SURF EP). ██████████ and ██████████ therefore represented they were ready and able to discuss all Scarborough EPs. ██████████ and ██████████ also requested 4 weeks notice for meetings, and proposed a meeting in late November 2022.
- On 22 November 2022, Woodside emailed ██████████, ██████████ 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 in Karratha on Tuesday 29 November 2022 or a date suitable to ██████████, ██████████ and SOS.
- On 24 November 2022, ██████████, ██████████ and Save Our Songlines wrote a letter to Woodside regarding the proposed meeting date. Despite recording in their correspondence on 26 September 2022 and 8 November 2022 that they had information and "objections" they were ready to share regarding the Scarborough Project, ██████████ and ██████████ now stated they would not proceed with consultation until there was clarification around the scope and purpose of the meeting and until Woodside confirmed their status as "relevant persons" and Woodside provided requested information. ██████████ and ██████████ stated "We will not be in a position to provide substantive information about our functions, interests and activities at the first meeting you have proposed", but still committed to discussing all Scarborough EPs. In particular ██████████, ██████████ and Save Our Songlines sought confirmation on the following items:
  - Acknowledgement from Woodside as to relevant person status for all EPs associated with the Scarborough Gas Project (4).
  - Provision of necessary information about the proposed activities and the anticipated impacts to allow for informed comment and input to be made as part of the relevant person consultation process. As a minimum they requested draft copies of the Scarborough EPs and associated technical and other information and any studies, research or other information held by Woodside relating to:
    - cultural values (not limited to ethnographic sites) including marine fauna of cultural significance (5)
    - impacts and risks of industrial pollution from gas processing on cultural heritage at Murujuga (2)

- Purpose of meeting, indicating they would be happy to meet when information requested in points above was received and they understood Woodside's assessment of them as relevant persons (4). They indicated that the initial meeting would be for introductions and an opportunity for [REDACTED], [REDACTED] and Save Our Songlines to ask questions and obtain information they require to determine the consequences, impacts and risks of the proposed activities so that consultation could commence. The issue of protocols around gender restricted information was raised and they stated that they would not be able to provide substantive information about their functions, interests and activities at the first meeting proposed (7).
- 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. Woodside reiterated its availability to meet and provided an option for any date in December 2022. [REDACTED], [REDACTED] and Save Our Songlines did not respond to this offer.
  - 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. (4)
  - 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.(4)
  - 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. (4)
  - Woodside again provided a link to the Consultation Information Sheets for all Scarborough EPs, which had been available on Woodside's website since September 2022, to assist in preparing for the meeting.
  - 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 (8).
  - Woodside noted the letter dated 24 November 2022 made 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 them to share this information by 9 December 2022. (7)
  - 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 (8).
- On 4 January 2023, Woodside emailed [REDACTED], [REDACTED] and Save Our Songlines to follow-up on its meeting request Woodside reiterated its availability to meet and provided an option for any date in January 2023.
- On 13 January 2023, [REDACTED], [REDACTED] Save Our Songlines emailed Woodside:
  - (1) [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.
  - (2) [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 Songlines. Woodside included the following responses to address the items raised, where appropriate:

- (1) 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). (4)
- (2) That consultation on the Scarborough EPs began when Woodside provided [REDACTED], [REDACTED] and Save Our Songlines with consultation information on the Scarborough EPs. (8) Information on the Seismic EP has been provided directly to [REDACTED], [REDACTED] and SOS since at least July 2022 [Ref Woodside letter 22 July 2022]
- (3) 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. (8)
- (4) 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. (8)
- (5) Woodside reiterated its availability to meet and provided an option for any date in January or early February 2023 (8).
  - 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. This included a detailed response from Woodside dated 5 January 2023 which responded to claims and objections made in relation to spiritual and cultural values.
  - On 8 February 2023, the EDO (acting on behalf of SOS) emailed Woodside and stated that the earliest its clients would be able to meet would be the weeks commencing 13 and 20 March 2023.
  - 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. (1)
  - 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. EDO requested that Woodside nominate a female staff member who could receive "highly sensitive" cultural information at the meeting, which Woodside took to mean that [REDACTED], [REDACTED] and Save our Songlines intended to share cultural information at the meeting.
  - 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 Woodside also nominated a female staff member to receive cultural information (7).
  - 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 they advise if there were any particular issues they wished to discuss during the meeting. (8)
  - 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. The agreed meeting protocol, based on a discussion between Woodside and [REDACTED] included that attendees would be all female, would attend with open hearts, deep listening and seeking a respectful conversation and open to sharing knowledge about the environment that may be affected, including the heritage of places. It was also agreed that there would be no audio or video recording of the meeting to respect privacy, safety and cultural values (7).

- On 13 March, the female nominated by Woodside to receive sensitive information called ██████████, ██████████ and SOS to check in and confirm the meeting would go ahead.
- **MEETING:** On 14 March 2023 (summarised in 16 March 2023 email), Woodside met with EDO, ██████████, ██████████ and Save Our Songlines on-country and discussed the proposed activity including providing a description of the pipeline route and risks and impacts associated with the activity. Maps and pictures of the pipeline and Scarborough Project footprint were shown. Despite Woodside's continued efforts and offers to meet since at least September 2022, this meeting represented the first time Woodside and ██████████, ██████████ and Save Our Songlines had met in person since the establishment of Save Our Songlines in November 2021. (4, 8)

Woodside provided an overview of the Scarborough activities (Seismic EP, Subsea EP, D&C EP, SITI EP (Cth and State)).

Feedback from ██████████, ██████████ and Save Our Songlines (at the on-Country meeting):

- When told about the pipeline route, borrow grounds and pipelay, ██████████, ██████████ and Save our Songlines spoke of concerns to the effect of the earth and world breaking apart when the project got underway and raised specific concerns about the pipeline passing near contaminated waters near the Montebello islands . They also discussed topics relating to whales and other sea animals related to the installation of the Scarborough Trunkline.
- When asked for their views on how the activities could be managed by Woodside to reduce risks and impacts to their interests, ██████████, ██████████ and Save Our Songlines told Woodside that the proposed activities gave them a sick feeling and the activities should be stopped (10). ██████████, ██████████ and Save Our Songlines also informed Woodside that, in their view, there is nothing that could 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 that would be respectful to its culture and country (10). Woodside Response (at the on-Country meeting):

- Woodside agreed to keep confidential to women and to not otherwise share cultural details which were shared at the 14 March 2023 meeting (7).
- [REDACTED] and [REDACTED] noted there is information that is not yet known to them as the rocks have not yet told them (for instance, wisdom that Murujuga rocks have for the past and future) and they are not sure when it will be known (9).
- 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 (8).
  - 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 (8). Woodside noted this was notwithstanding comments made at the meeting by [REDACTED] and [REDACTED] that the proposed activities gave them a 'sick feeling' and should be stopped.
  - Woodside provided responses to specific actions taken during the meeting, including:
    - A request for Woodside to provide background information on the "why" behind the Scarborough activities. Woodside responded that the Scarborough Gas Project helps play a role in the global energy transition, including helping neighbouring Asian countries take action on emissions reduction and advised there is further information on Woodside's website.
    - A request for Woodside to check with MAC whether MAC's ethnographic survey can be shared with [REDACTED], [REDACTED] and Save Our Songlines. Woodside advised that the ethnographic survey is held by MAC and Woodside does not have permission to share it (3).
    - A request for Woodside to confirm whether fracking would occur in relation to the Scarborough activities. Woodside confirmed that no fracking would be undertaken as part of the proposed Scarborough activities (1).
- On 17 March 2023, Woodside emailed [REDACTED] and [REDACTED] and Save Our Songlines acknowledging SOS correspondence to Woodside dated 6 June 2022, 26 September 2022 and 24 November 2022 and the discussion with Woodside on 14 March 2023. Woodside included an attachment containing responses to relevant objections, claims and additional information raised in the correspondence relating to the activities the subject of this EP. Woodside stated:
  - Woodside has conducted an ethnographic survey to support the development of EPs for the Scarborough Project which have not identified any heritage places, objects or values which will be impacted by the activities covered by the this EP.
  - None of Woodside's agreements with Traditional Custodians include "gag clauses" or restrictions on voicing opinions on our projects.
  - Re the principles of FPIC: Woodside is guided by UNDRIP under our Indigenous Communities Policy and has consulted representative institutions including MAC for a number of years.
  - Woodside has made several attempts since November 2021 to engage with [REDACTED], [REDACTED] and Save Our Songlines. There was a meeting held on Tuesday 14 March 2023. Woodside is open to receiving feedback.
  - Re cultural heritage impacts, concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the SITI EP. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the PAP for this EP but may be evaluated in other Scarborough EPs as appropriate.

- Re impacts on rock art through pollution, emissions from the activities covered by the SITI 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 Seismic EP are located ~374 km away from Murujuga.
  - Re the proposed removal of rock art from the Perdaman site, Woodside stated it is not appropriate for Woodside's EPs to address or seek to regulate the activities of third parties progressing separate projects.
  - Woodside 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 it appropriate to do so. The Scarborough Project Cultural Heritage Management Plan is a publicly available document and can be found on Woodside's website.
  - Woodside continues to consult with MAC on all relevant aspects of this EP prior to and during the execution of activities.
  - Re impacts and risks on Aboriginal heritage sites on and around Murujuga, Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by Scarborough activities. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the Seismic EP.
  - Woodside considers the time it has provided to consider information prior to meetings to be more than suitable to inform ██████████ ██████████ and SOS' feedback on Woodside's proposed Scarborough EPs.
  - We confirm 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.
- On 24 March 2023, the EDO (acting on behalf of ██████████, ██████████ and Save Our Songlines) provided a letter to Woodside which copied NOPSEMA, DMIRS and the WA Minister for Mines and Petroleum:
    - The letter acknowledged that Woodside had provided information on all relevant Scarborough EPs (Seismic, Drilling, SITI and Subsea), and confirmed that ██████████ ██████████ and ██████████ raised "particular concerns about the impacts that underwater activities that form part of the EP activities might have on their functions, interests an activities". This confirmed that the parties were consulting on all EPs.
    - The letter detailed a response to the 14 March 2023 meeting and Woodside's 16 March 2023 email, and covered the range of Scarborough EPs (Seismic, D&C, SITI, Subsea and State EP), including this proposed activity. The EDO noted its client's concerns relating to:
      - The summary of the meeting, stating the functions, interests and activities of their client were distinct from those of Murujuga Aboriginal Corporation and that their stories were not told as a part of any consultation with MAC (6). They raised concerns about impact of underwater activities, impacts related to greenhouse gas and Murujuga industrialisation.
      - Clarification of its client's position, that Woodside had mischaracterised their clients position. Their view is that Woodside should not undertake the Scarborough Gas Project because of the harm it will cause and that is different to the conclusion that there is 'nothing that can be done' to minimise impacts or be respectful to our clients, their culture and their country (10) Their clients regard genuine consultation on the proposed EP activities an important demonstration of their respect for their functions, interests and activities. The letters assert that they consider that the consultation process has just commenced (11).
      - Communication of relevant person status – the EDO stated that their clients should be recognised as relevant persons individually and not only Save Our Songlines, the foundation their clients founded.(4)
      - Acknowledgement of response to questions arising at the meeting of 14 March 2023 (1), that Woodside had followed up their requests and provided a link to Woodside's publicly available website and advised that the ethnographic survey was held by MAC and Woodside did not have permission to share it.(12)

- The letter noted that the EDO's clients would review the consultation information provided, and that it anticipated its clients would require approximately six weeks to do this (8).
- The letter requested Woodside not submit the draft environment plan until consultation was complete.
- On 28 March 2023 Woodside emailed the EDO, ██████████, ██████████ 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:

In regards to 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 provided 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.
- In regards to functions, interests and activities
- Woodside acknowledged that it had been advised that ██████████, ██████████ and Save our Songlines' functions interests and activities are distinct from those of MAC and that it was interested to learn about this further (6).
- In response to a request for the ethnographic survey undertaken by MAC, Woodside reiterated that it has no authority to provide this information. Given ██████████ previous role with MAC at the time the ethnographic survey was being undertaken, Woodside suggested that ██████████ may have contacts at MAC to request a copy of that survey (12).
- Woodside advised that as to ██████████, ██████████ and Save Our Songlines' functions, interests and activities, 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 (8).
- Woodside confirmed that as ██████████, ██████████ 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 (8, 9).
- In regards to 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 and industrialisation of Murujuga (2)
- In the meeting, Woodside provided an overview of the Scarborough Project and potential impacts of activities on whales (13).
- Emissions from the activities covered by the Commonwealth EPs are of a scale that no credible impact pathway to their onshore cultural interests is foreseen. This has been the subject of separate correspondence (2).
- In relation to the detail of the 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 indicated that a large volume of information on the Scarborough Project had been accessed, read and considered. The correspondence showed an informed and thorough understanding of the various Scarborough activities and the Scarborough Project. (8, 9)
- In relation to Consultation in general (8), Woodside advised it has continued to consult with ██████████, ██████████ and Save Our Songlines' and continues to invite further consultation.
- In relation to Relevant persons. (4), 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.
- In relation to Ongoing consultation (4), 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 ██████████, ██████████ and Save Our Songlines.
- In relation to Further consultation (8, 9), Woodside noted that ██████████, ██████████ 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 ██████████, ██████████ 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.
- The agreed meeting protocol was shared again, including there being no audio or visual recording of meetings.
- On 29 March 2023, the EDO responded acknowledging receipt of Woodside’s email, noted the invitation for further consultation and advised it was seeking instructions and would respond in due course.
- On 17 April 2023, Woodside responded by email to a letter from the EDO dated 6 April 2023 addressed to NOPSEMA and copied to Woodside about a different activity. Woodside stated:
  - Woodside provided notes including in relation to Woodside’s repeated and protracted attempts to meet, engage and consult with ██████████ and ██████████ and SOS on the Scarborough Project(8).
  - Woodside reiterated the process for consultation remains open post EP approval and that it has consistently offered an open invitation to ██████████ and ██████████ and SOS to provide feedback to allow Woodside to consider the potential impacts and risks of the activities on functions, interests and activities and to provide input on things Woodside can do to mitigate those potential impacts and risks on all Scarborough EPs. (8)
  - An attachment of 5 pages sent with this response to NOPSEMA sets out the history of Woodside’s extensive engagements with ██████████ and ██████████ and SOS. It states that since June 2018, Woodside has undertaken 82 substantial engagements relating to the Scarborough Project including 32 meetings with Traditional Custodians and their representatives (8).
  - The letter went on to provide further context and highlighted relevant engagements with ██████████ and ██████████ and SOS, and stated Woodside’s position i.e. having regard to all of the circumstances of the consultation undertaken with ██████████ and ██████████ and SOS, and in light of the concepts of “reasonable time”, “reasonable diligence”, a consultation obligation that “must be capable of practical and reasonable discharge ... that must be capable of performance”, NOPSEMA can be reasonably satisfied that an appropriate level of consultation has taken place with ██████████ and ██████████ and SOS (8).
  - Woodside also outlined details about correspondence and the opportunities and invitations Woodside has attempted to provide for consultation to occur and why these have not occurred (8).
  - Woodside closed the letter by stating Woodside would be pleased to discuss the notes contained in this letter and the issues raised in the Letter from EDO with NOPSEMA.
- On 8 May 2023, the EDO emailed Woodside to advise they had not had any response to date, and were writing again to enquire whether Woodside wished to propose dates that can put to their clients for consultation regarding another Scarborough EP.
- On 9 May 2023, Woodside emailed ██████████, ██████████, and Save Our Songlines via the EDO reiterating Woodside’s willingness to engage in ongoing consultation on Scarborough EPs; On proposed meeting dates in May, noting that Woodside was awaiting response on ██████████, ██████████ and Save our Songlines availability

and that Woodside was open to meeting either on country or remotely, noted draft guidance from NOPSEMA regarding Managing gender-restricted information, and included a draft agenda (8).

- On 9 May 2023, Woodside emailed ██████, ██████ and Save Our Songlines, with respect to the SITI EP and included responses to relevant objections (some of which are broadly applicable to the entire Scarborough Project including activities under the other Scarborough EPs), 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 (Mott 2019, UWA 2021, McDonald and Phillips 2021, Nutley 2022a and 2022b). These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI 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 these surveys (Mott 2019, 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. (5, 6)
  - Woodside advised Archaeological assessments have been made over the ancient landscape, being the extent of the continental shelf which was previously exposed during human occupation. This includes an Australian-first assessment of the archaeological perspectivity along the trunkline route conducted with the support and consultation of Traditional Custodians (UWA 2021). An executive summary is available on Woodside’s website at <https://www.woodside.com/docs/default-source/sustainability-documents/indigenous-peoples/cultural-heritage/scarborough-pipeline-cultural-heritage-assessment-exec-summary.pdf> (5).
  - Woodside advised it has had all of its submerged heritage work assessed by an expert underwater archaeologist for gaps in our processes (Nutley 2022a), as well as a review of Side Scan Sonar data to confirm whether archaeological sites could be identified on the seabed (Nutley 2022b). (5)
  - Woodside advised that Section 4.9.1 of the SITI EP includes a summary of these assessments. The assessments include the relevant areas sufficient to assess the cultural values of the Operational Area for this EP. (5)
  - Woodside confirmed that 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. (3)
  - 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 mechanism such as deferring to MAC's Circle of Elders. Woodside is guided by UNDRIP under its First Nations Communities Policy and has consulted representative institutions including MAC for a number of years (6).

- 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 SITI EP (8).
  - Woodside confirmed that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the SITI EP (2). This EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program (2, 5).
  - Woodside advised the proposed Petroleum Activities Program is outside of the National Heritage Place and the anticipated boundary of the Murujuga Cultural Landscape World Heritage Property (2).
  - Woodside confirmed the extraction of Scarborough gas for onshore processing is not within the scope of the activity described in this EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for this EP but may be evaluated in other Scarborough EPs as appropriate (2).
  - Woodside confirmed emissions from the activities covered by this EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. Woodside advised that no rock art will be displaced as a result of the Scarborough Project (2).
  - The activities covered by this EP are located in Commonwealth waters and will have no impact on access to sites of cultural and spiritual significance (2).
  - 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 it appropriate to do so. (5)
  - 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](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) (3)
  - Woodside advised it continues to consult with MAC on all relevant aspects of this EP prior to and during the execution of activities. (1)
  - 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 (8, 9).
  - 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 (8, 9).
  - Woodside reiterated the consultation information sheet has been available on Woodside's website since August 2021 and invited feedback on the proposed activities to be provided before 30 September 2021. Revision 1 of the SITI EP has been available on the NOPSEMA website since 13 January 2022. Woodside re-provided links to both documents (8, 9).
- On 10 May 2023, the EDO (acting on behalf of [REDACTED], [REDACTED], and Save Our Songlines) emailed Woodside to query the date of previous correspondence.
  - On 15 May 2023, Woodside emailed the EDO confirming that the May 2023 correspondence refers to emails dated 9 May 2023 with the subject line "RE: Scarborough Environment Plans – Consultation.
  - On 1 June 2023, the EDO emailed Woodside confirming [REDACTED], [REDACTED], and Save Our Songlines were available to meet in Karratha on Tuesday, 13 June 2023 (8).

- On 7 June 2023, Woodside emailed [REDACTED], [REDACTED], and Save Our Songlines. Acknowledging and in response to the Save our Songlines correspondence of 6 June 2022, 26 September 2022, 24 November 2022, correspondence via EDO of 6 April 2023, 18 April 2023 and during meeting on 14 March 2023, Woodside confirmed:
  - Ethnographic surveys have been carried out to support EP development (and the EP updated to reflect this), with surveys not identifying any heritage places, objects or values which will be impacted by any of the activities covered by the SITI EP (5)
  - None of Woodside's agreements with Traditional Custodians include "gag clauses" or restrictions on voicing opinions on our 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 (3).
  - 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 our Indigenous Communities Policy and has consulted representative institutions including MAC for a number of years (6).
  - Woodside has made several attempts since November 2021 to engage with Save Our Songlines, with a meeting held on Tuesday 14 March 2023. We confirm that Woodside is open to receiving feedback and to discussing issues raised in relation to the SITI EP. 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. (8)
  - The SITI EP assesses both direct and indirect impacts and risks associated with the PAP and is outside the National Heritage Place and anticipated boundary of the Murujuga Cultural Landscape World Heritage Property (5).
  - Emissions from the activities covered by the SITI EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. No rock art will be displaced as a result of the Scarborough Project and damage to heritage sites is not anticipated as a result of the PAP (2, 5)
  - The activities covered by the SITI EP are located ~430km away from Murujuga and will have no impact on access to sites of cultural and spiritual significance. (2, 5)
  - Woodside 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 it appropriate to do so (12)
  - Woodside shared a link to the publicly available Scarborough Project Cultural Heritage Management Plan (12)
  - In response to the letter dated 26 September 2022, Woodside referred to responses provided to address claims in the 6 June 2022 letter and also confirmed Woodside has undertaken an ethnographic survey to identify cultural heritage that may be impacted by Scarborough activities. This work has not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI EP (5).
  - In response to the letter dated 24 November 2022, Woodside confirmed it considers the time and information it has provided, including the meeting on Tuesday 14 March 2023, to be more than suitable to inform feedback on proposed Scarborough EPs. As per the 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 (8, 9).
- On 7 June 2023, Woodside emailed the EDO requesting the email be forwarded to [REDACTED], [REDACTED], and Save Our Songlines. Woodside confirmed availability to meet in Karratha on 13 June 2023 to continue consultation on the Scarborough EPs; proposed an agenda; confirmed meeting protocols and advised Woodside attendees. Woodside requested to know who would be attending on behalf of SOS and confirmation of other meeting details. The agenda included the sharing of interests, the functions of [REDACTED], [REDACTED] and Save Our Song lines, a walk through of Scarborough EPs, and a description of the Scarborough Project and activities to be undertaken under each EP. The same meeting protocol agreed prior to the March meeting was shared, including female only meeting, attend with

open hearts and prepared for deep listening and respectful conversation and to share knowledge about the environment including the heritage of places. In addition, it was agreed there would be no audio or visual recording. Because it had not received confirmation of the meeting and because of past history of Woodside turning up for meetings without ██████, ██████ or SOS attending, or meetings that did not proceed, on 9 June 2023, Woodside emailed the EDO, ██████, ██████, and Save Our Songlines requesting confirmation of the meeting scheduled for Tuesday 13 June 2023 and its time and location. Confirmation was sought by 5pm on 9 June 2023 as there were a number of flight and other logistics that needed to be confirmed by 5pm in order for that meeting to progress on Tuesday. If the meeting could not proceed then requested the provision of alternative meeting dates (8).

- On 9 June 2023 after 5pm the EDO emailed Woodside confirming availability for a morning meeting on 13 June 2023 (8).
- On 9 June 2023, Woodside emailed the EDO advising reasons why it was not available to meet on 13 June 2023 ie. flights and other logistics had timed out (8).
- On 10 June 2023, the EDO emailed Woodside to advise ██████, ██████ and Save Our Songlines were available to meet on 13 June 2023 on country with the EDO and provided a phone number to discuss logistics. EDO did not object to the agenda or the meeting protocol (including no recording being taken) (7, 8, 9).
- On 12 June 2023, the EDO on behalf of its clients ██████ ██████ and Save Our Songlines emailed Woodside advising availability to meet on 13 June 2023 at Hearson Cove. Despite its previous position committing to consulting on all Scarborough EPs, and confirmation that ██████, ██████ and SOS had information to share on all Scarborough EPs and the Scarborough Project generally (see correspondence dated 26 September 2022, 8 November 2022 and 24 November 2022) the EDO for the first time stated it did not think it was appropriate to deal with all 4 EPs in one meeting (15). EDO did not raise any concern with the meeting protocol, including no recording being taken.
- On 12 June 2023, Woodside emailed ██████, ██████ and Save Our Songlines and the EDO regarding meeting arrangements and a draft agenda. Woodside requested next available dates for a meeting with ██████, ██████ and Save Our Songlines and the EDO.
- On 12 June 2023, the EDO emailed Woodside to advise the ██████, ██████ and Save Our Songlines wanted to keep the existing arrangement for a consultation meeting on 13 June 2023 in Karratha.
- On 14 June 2023, the EDO emailed Woodside to advise that their clients, ██████, ██████ and Save Our Songlines were still willing to meet at the times specified in the previous email while EDO solicitors will be available in Karratha and that Woodside could join by phone or videoconference if needed.
- On 14 June 2023, Woodside emailed the EDO and ██████, ██████ and Save Our Songlines to advise Woodside was not available to meet the week of 13 June 2023 but proposed 5 alternative dates in June 2023 for a meeting to be held in Karratha or via Teams (remotely). These dates allow for Woodside to follow the agreed protocols (including having a female only team) (7, 8).
- On 14 June 2023, the EDO emailed Woodside to advise it would revert back once instructions had been received from their clients.
- On 14 June 2023, the EDO emailed Woodside, confirming dates to meet in Karratha in June, and noted the agreed meeting protocols.
- On 20 June 2023, the EDO emailed Woodside to advise the EDO will not be in a position to arrange any in-person consultation meeting for the week of 20 June and the EDO is awaiting instructions as to preferred dates and next steps for consultation. In the meantime Woodside could let the EDO know if Woodside had any questions (8).
- On 21 June 2023, Woodside emailed the EDO, ██████, ██████ and Save Our Songlines, thanking them for their email and advising that Woodside was looking forward to hearing from them when ready. Woodside offered for comments / queries / requests to be emailed in the meantime if more efficient (8, 9).
- On 28 June 2023, the EDO on behalf of its clients ██████, ██████ and SOS, emailed a letter to NOPSEMA and copied Woodside urging NOPSEMA to not accept the 4 Scarborough EPs Woodside had submitted as Woodside had failed to comply with its consultation obligations under reg 11A (8, 9). The EDO stated:

Woodside had not notified their clients that the EPs had been submitted nor the dates of submission.

A meeting scheduled for 13 June 2023 did not proceed; plans to reschedule are ongoing.

Woodside had not explained the activities of the Scarborough EPs and the associated impacts and risks in a way the SOS can understand and how this will impact their functions, interests and activities. Also, [REDACTED], [REDACTED] and SOS had not been provided with sufficient information and a reasonable period for consultation (8, 9).

- On 3 July 2023, Woodside emailed the EDO and copied NOPSEMA in response to the EDO's letter to NOPSEMA dated 28 June 2023 (copied to Woodside). Woodside clarified:
  - Woodside had consulted [REDACTED], [REDACTED] and SOS while preparing the 4 Scarborough Project EPs since March 2022. Woodside reaffirmed [REDACTED], [REDACTED] and SOS's relevant persons status (4, 8).
  - Consultation between Woodside and [REDACTED], [REDACTED] and SOS had been extensive over an extended period. As at 13 April 2023, consultation had included 5 meetings, 2 attempted meetings, 19 emails, 7 phone calls and 10 letters [Ref letter to NOPSEMA, copied to EDO dated 17 April 2023] (8, 9).
  - At a meeting on 14 March 2023, Woodside provided an overview of the Scarborough Project to [REDACTED], [REDACTED] and SOS to provide further understanding of the activities to be carried out under the Scarborough EPs. Woodside agreed to keep the full details of the meeting confidential at the request of the EDO's clients on the basis that some matters included secret women's business (7, 8, 9).
  - Following this meeting, a suite of correspondence was exchanged where Woodside further explained the activities to enable [REDACTED], [REDACTED] and SOS to make an informed assessment of the possible consequences of the activities on their functions, interests or activities. This was in addition to consultation material previously provided since August 2022 and the publicly accessible Scarborough EPs published on NOPSEMA's website. (8, 9)
  - During the meeting, without expressing to Woodside what their functions, activities and interests were (which remained (at the date of this letter) unexpressed by the EDO or its clients), [REDACTED], [REDACTED] and SOS informed Woodside that nothing could be done by it to progress with the activities to be carried out under the Scarborough EPs in a way that could minimise the effects of those activities on their undisclosed functions, interests or activities (10). Nonetheless, Woodside had continued to continue to consult with [REDACTED], [REDACTED] and SOS in the event they had any matters they wished to communicate to Woodside that could be relevant to the Scarborough EPs (8, 9).
  - Woodside had been prepared to meet and had continued to correspond with the EDO's clients and the EDO.
  - Woodside considered it had met reg 11A of the Regulations.
  - Woodside remained open and available to meet and proposed a meeting date from 3 July 2023.
- On 17 July 2023, the EDO emailed Woodside with 4 potential video conference meeting dates in July. The EDO also acknowledged receipt of Woodside's letter of 3 July 2023 and advised it would revert in due course.
- On 17 July 2023, Woodside emailed the EDO advising it would revert with meeting details.
- On 18 July 2023, Woodside emailed the EDO confirming it was available for a meeting on Tuesday 25 July at 9am by Webex and asked for confirmation. A draft agenda was proposed and the agreed protocols were included that were previously agreed. This included female only attendees, an agreement to attend with open hearts and ready for deep listening and respectful conversation and an agreement to share knowledge of the environment including the heritage of places. It also included an agreement that there would be no audio or video recordings.
- On 19 July 2023, Woodside again provided the EDO with NOPSEMA consultation documents (brochure, guideline and policy) and again asked they be provided to [REDACTED], [REDACTED] and Save Our Songlines ahead of the meeting.
- On 19 July 2023, the EDO advised [REDACTED] and [REDACTED] of EDO have taken over carriage of the matter and they will respond to the latest emails from Woodside.

- On 19 July 2023, the EDO responded to Woodside confirming the meeting on 25 July 2023 and provided a revised agenda which was the agenda that was agreed ahead of the 13 June Karratha meeting that did not proceed. The EDO made no objection to the agreed meeting protocol, including no audio or video recordings (7).
- On 20 July 2023, Woodside responded to EDO agreeing to the meeting time and date, stating that the proposed agenda would be reviewed internally, and requesting confirmation on specific protocols to be adhered to in the meeting would be aligned with those previously set by SOS (7).
- On 21 July 2023, Woodside emailed EDO notifying that arrangements had been made for the planned meeting on 25 July, that Woodside was comfortable with the proposed agenda and that Woodside would provide information on the broader Scarborough project and EPs currently being assessed rather than a single EP. This would give ██████████, ██████████ and SOS an opportunity to discuss and ask questions on the other Scarborough EPs currently being assessed. Woodside also sought confirmation that previously mentioned protocols would be followed (7).
- On 24 July 2023, EDO emailed Woodside to inform that presentation of broader information on the Scarborough Project and EPs was acceptable (15) and requested that the meeting be recorded but paused for discussion of culturally sensitive matters (7). This was raised a day before the meeting, despite Woodside circulating the agreed protocol for comment several times since the March 2023 meeting. EDO had also confirmed that the existing protocols would be appropriate (7).
- On 25 July 2023, Woodside emailed EDO to state that Woodside intends to adhere to the protocols already agreed, including that attendees are welcome to take written notes however there will be no other recording of meetings. Woodside stated that it does not consent to the meeting being recorded (7).
- On 25 July 2023, ██████████, ██████████ and SOS' lawyers confirmed they were running late to the meeting. [Ref 25 July 2023 email 9:01am]
- **MEETING:** On 25 July 2023, Woodside met with EDO and SOS, ██████████ and ██████████ via web meeting:
  - introductions, EDO stated that for the meeting to proceed the meeting had to be recorded. It was stated that if the meeting was not recorded, ██████████, ██████████ and SOS would not participate in the meeting. ██████████, ██████████ and SOS were emphatic and made this point with raised voices.
  - As this had not been agreed between the parties, at around 9.40am, the meeting paused while arrangements were discussed. As noted above, EDO only raised this as an issue on 24 July, the day before the meeting. EDO, SOS, ██████████ and ██████████ had an opportunity to object to the agreed meeting protocol at any time between the March and July meetings, including when Woodside circulated the agreed protocol on several occasions (7).
  - During the meeting on 25 July, following a pause in the meeting to consider recording, Woodside emailed EDO to inform that following an internal discussion, Woodside agreed to rejoin the meeting and the meeting being recorded under certain conditions (7). The issue around recording delayed the meeting by approximately 1 hour.
  - When the meeting recommenced, Woodside provided the meeting with a power-point presentation covering all 4 Scarborough EPs and presented on regulatory context and provided an overview of the Scarborough Project. In accordance with emails exchanged before the meeting Woodside came to the meeting ready, willing and able to address all 4 Scarborough EPs including the activities under this EP and to hear from ██████████, ██████████ and SOS on their knowledge and concerns. Detailed information on each EP was provided in the slide pack (8, 15).
  - Woodside opened the presentation by describing the Scarborough Project and the 430km trunkline route and the use of the trunkline including that gas will be pumped through it and exported back to the Pluto Gas Plant. On behalf of ██████████, ██████████ and SOS, EDO intervened on a number of occasions during the meeting and told Woodside words to the effect that ██████████, ██████████ and SOS did not want the opportunity to hear the presentation on any other EP, stating that their client was only there to consult on one EP (Seismic EP). This was despite EDO confirming in its email on 24 July 2023 that Woodside had said it would provide information on the Scarborough Project and other EPs. Woodside presented on the Seismic EP including by describing the activity in detail and talking through potential risks and impacts of the proposed activity and controls in place to manage them. Woodside also attempted to provide information on the rest of the Scarborough EPs (SIT1, D&C and Subsea) and gave an opportunity to hear ██████████, ██████████ and SOS in relation to the activities under these EPs (as agreed in the meeting agenda), but was refused (8, 15).
  - Woodside provided an overview of the Scarborough project and the offshore infrastructure. Despite a direction to only discuss the Seismic EP, ██████████ asked a question relating to the Drilling EP regarding the depth of the Scarborough wells(1). Woodside noted the wells will be drilled in approximately 900 -950 m water depth, however the wells themselves are drilled a lot deeper to get to the reservoir. Woodside noted they would take an action to provide specific accurate water depths and

- target reservoir depths, and provided this detail as part of their correspondence on 27 July 2023. ██████████, ██████████ and SOS also asked questions relating more broadly to the other Scarborough EPs.
- Woodside provided an overview of the Scarborough Seismic survey activity. ██████████ asked about the spatial extent of the Operational Area and the larger environment that may be affected. Woodside provided an overview of the spatial extent of the environment that may be affected for the Scarborough project and how it is driven by the highly unlikely event of a hydrocarbon spill from a vessel collision. ██████████ enquired as to the unplanned risk of an oil spill, particularly querying who determines the credible spill scenario (1). Woodside offered to explain or to note the question and respond after the presentation, though EDO lawyers said they would make a list of questions to go through after. At this point, EDO lawyers again required that the meeting would only discuss the seismic EP (15). When the topic of drilling and well depth was raised later in the meeting ██████████ indicated she didn't want to skip past and wanted to go through the 'whole lot', and, despite this, EDO lawyers again suggested the meeting was to only discuss the seismic EP (15).
  - ██████████, ██████████ and SOS provided feedback and asked questions some which related to all of the Scarborough EPs. ██████████, ██████████ and SOS stated at the meeting words to the effect that no new cultural information was provided relevant to any of the Scarborough activities. ██████████, ██████████ and SOS declined to provide further detail about the nature of their cultural values at the meeting (8, 9).
  - ██████████, ██████████ and SOS raised queries relating to the oil spill modelling Woodside undertakes to determine the EMBA (1). Woodside gave an overview of oil spill modelling and the stochastic nature of the model (1). EDO requested Woodside to provide the underlying information for the oil spill modelling about how the risk is determined i.e. worst case hydrocarbon spill scenario. Woodside provided a response to this request as part of their correspondence on 27 July 2023.
  - ██████████, ██████████ and SOS stated that they are broadly concerned about impact on the whales (13) and other animals (16), the songlines (unspecified) and the energy lines (unspecified) (18).
  - ██████████, ██████████ and SOS stated that only they know the songlines and other Traditional Custodians did not, including MAC (6)
  - The meeting agreed outstanding questions for Woodside to revert on (1). Woodside also pointed Save Our Songlines, ██████████ and ██████████ to the summary consultation information sheets which are designed to explain highly complex content in a more readily understood manner (8).
  - Woodside asked whether Save Our Songlines, ██████████ and ██████████ could share information about themselves and Save Our Songlines, in particular the communal and/ or individual interests held (9). ██████████ declined to do so and suggested that this meeting was not the time for that. ██████████ stated the focus of herself, ██████████ and Save Our Songlines at that time was to understand the activities, and that this information could be shared at a later time when they are ready (9).
  - Woodside pointed out that ██████████, ██████████ and SOS had told Woodside that they would provide information at the meeting and had not done so. Woodside asked for honesty going forward so that information would be provided to Woodside where ██████████, ██████████ and SOS had told Woodside they would provide it.
  - Woodside offered to establish fortnightly meetings to provide ██████████, ██████████ and SOS opportunities to provide the information to Woodside. ██████████, ██████████ and SOS stated they would be unavailable for the next 6 weeks. (8)
  - SOS stated that they did not regard consultation had commenced until today. Woodside did not agree and this contradicts previous correspondence from ██████████, ██████████ and SOS, where letter 24 March 2023 consultation had just commenced (11).
  - At this meeting, further meeting opportunities were also discussed by Woodside. Woodside suggested there be fortnightly meetings. ██████████, ██████████ and SOS declined this offer.
  - The parties agreed to share the recording of the meeting.
    - On 25 July 2023, EDO emailed Woodside:
      - (1) Requesting a copy of the recording,
      - (2) Requesting a response to seven follow up questions from ██████████, ██████████ and SOS, six of which are relevant to this EP relating to freshwater, migratory patterns of whales, dugongs and turtles, seagrass distribution, the worst case spill scenario and modelling, acoustic emissions (specifically decibels) associated with the seismic survey (1).
      - (3) Informing Woodside of ██████████, ██████████ and SOS' desired approach for response to the meeting on 25 July and further engagements, including that ██████████, ██████████ and SOS would provide a preliminary response to the meeting in video format on country, which may need to be supplemented (14). This video has never been provided to Woodside.



- (4) Proposing a sequence of meetings and responses be adopted on a per-EP basis (15)
- On 25 July 2023, Woodside emailed EDO notifying that Woodside will discuss the points raised and respond accordingly, and agreeing to provide the recording of the meeting.
  - On 25 July 2023, EDO emailed Woodside requesting the meeting recording be provided via SharePoint, confirming that it would be passed on.
  - On 26 July 2023, Woodside provided a recording of the meeting held on 25 July to EDO via a secure file transfer system and requested that it be passed on to SOS.
  - On 27 July 2023, Woodside responded to EDO's email on 25 July:
    - Confirming that a copy of the meeting recording from 25 July had been sent to EDO
    - Providing responses to the seven follow up questions from ██████████, ██████████ and SOS (1)
    - Noting that despite agreement prior to the meeting that cultural interests and feedback would be discussed at the meeting, this was not shared (9)
    - Describing previous offers of meetings, noting that these were declined and confirming Woodside availability to meet on country (8, 14)
    - Describing why it is it Woodside's preference to consult on the Scarborough project as a whole rather than on a per-EP basis, and noting that during the meeting ██████████, ██████████ and SOS asked questions about various Scarborough Project EPs (15).
    - Describing how requirements of Reg 11A have been met, however Woodside remains open to continued consultation with SOS in good faith (8).
    - Noting that an offer to meet fortnightly to support consultation had been made, which was declined
  - On 3 August, Woodside emailed EDO requesting that a message be passed on to SOS:
    - Following up on Woodside's offer to meet on-country and whether SOS would be available (15).
    - Informing that a separate Scarborough EP had been accepted by NOPSEMA with conditions requiring Woodside to seek further input, and requesting that SOS inform Woodside if it has input or information to provide (8, 9).
    - Providing links to information about EP consultation and describing the purpose of EP consultation (8).
    - Informing SOS that gender-restricted or culturally sensitive information is managed carefully, and attaching NOPSEMA's Policy for Managing Gender-Restricted Information" (7).
  - On 9 August 2023, EDO emailed Woodside:
    - Confirming that the recording of the meeting from 25 July had been received and passed on to SOS
    - Reiterating its "clients explained they were not ready to provide Woodside with information following the presentation". This was contrary to previous correspondence where ██████████ and ██████████ confirmed they had information to share on all Scarborough EPs and the Scarborough Project generally (see correspondence dated 26 September 2022, 8 November 2022 and 24 November 2022) (8, 9).
    - Stating that approaching consultation in good faith requires flexibility, that a fortnightly meeting arrangement is not appropriate and that a proposed date for another meeting will be part of a separate email (8).
    - Reiterating that SOS, ██████████ and ██████████ intend to consult on EPs individually and consecutively, rather than concurrently, despite the previous position that consultation was occurring across all Scarborough EPs and the Scarborough Project generally (15).
    - Stating that SOS do not consider that requirements of Regulations have been met, and that a response following the meeting on 25 July is in preparation (8).
  - On 16 August 2023, Woodside emailed the EDO to clarify that they were acting for ██████████ and ██████████.
  - On 17 August 2023, EDO confirmed they representing both ██████████ and ██████████.

- On 21 August 2023, Woodside emailed the EDO seeking consultation regarding another EP. In the email, Woodside also reiterated previously agreed upon consultation conditions and reaffirmed its readiness and willingness to meet and consult with ██████████, ██████████ and SOS, and requested available date to meet
- On 21 August 2023, Allens on behalf of Woodside sent a letter to the EDO to inform that Woodside's position is that it had complied with Regulations, and that Woodside is prepared to meet with ██████████, ██████████ and Save Our Songlines at any time or place suitable to them so that they could provide any information they consider relevant. That letter attached a table confirming consultation undertaken with ██████████, ██████████ and SOS, relevant to all Scarborough EPs.
- On 22 August 2023, the EDO emailed Woodside informing that they would obtain further instructions from their clients regarding available dates for consultation and would email soon. The EDO also reiterated that SOS remains willing to consult.
- On 25 August 2023, the EDO emailed Woodside with two dates and location options available for consultation with their clients.
- On 25 August 2023, Woodside emailed the EDO seeking clarification on the two dates and information regarding payment for ██████████ airfare to and from the consultation location.
- On 25 August 2023, the EDO emailed Woodside confirming both date options.
- On 25 August 2023, Woodside emailed the EDO confirming receipt of the email and responding that they would revert with availability.
- On 29 August 2023, Woodside emailed the EDO with a preferred consultation date of 12-13 September 2023. Woodside also reaffirmed that these consultations would take place on a no-admission basis in relation to whether Woodside has satisfied Reg 11A of the OPGGS (E) Regulations given that EDO's clients hold a different view. It was also stated in the email that Woodside is proceeding on the basis that previously agreed protocols apply (7, 8). Woodside also enquired about receipt of a video taken on Murujuga that was expected to be forwarded from ██████████, ██████████ and SOS (8, 9, 14).
- On 30 August 2023, the EDO emailed Woodside confirming receipt of email and said they would respond soon.
- On 1 September 2023, Woodside emailed the EDO following up a confirmation for consultation on the 12 and 13 September 2023, for a 2-day on-Country workshop with SOS.
- On 4 September 2023, the EDO emailed Woodside responding to the email sent on the 29 August 2023:
  - The EDO agreed that consultations are to take place on a no-admission basis and provided instructions on how the 2-day consultation meeting is to proceed including separating the two days over time (7, 8).
  - The EDO asked that the first meeting focus on Seismic EP and the second meeting, sometime after the 29 September 2023, will take place on Country with the intention of visiting the island off Murujuga (14). As noted above, this was contrary to the initial position taken by ██████████, ██████████ and SOS that they would consult on all Scarborough EPs and had information to share on each Scarborough EP (15).
  - The EDO expressed their client's interest in meeting a third time to discuss appropriate measures put in place.
  - The EDO asked Woodside to confirm that audio recordings at the meeting are permissible, as agreed on 25 July 2023, and that the consultation is to take place with only women (7).
  - The EDO responded to Woodsides query about the on-Country Murujuga video and stated that, their clients no longer intend to provide that video (14).
- On 7 September 2023, the EDO emailed Woodside asking to confirm the consultation date of 12 September 2023 for planning purposes (flights and accommodation).

- On 7 September 2023, Woodside emailed the EDO confirming the consultation date of 12 September 2023 along with a proposed location in Karratha. Woodside restated the previously agreed upon protocols and listed the female Woodside employees that would be attending the meeting. Woodside confirmed the consultation would be conducted on a non-admission basis given the different view of the parties as to whether consultation occurred in accordance with Environment Regulations (7, 8).
- On 7 September 2023, the EDO emailed Woodside agreeing to the location, outlining dietary requirements and listing the attendees on their side.
- On 7 September 2023, as part of the Federal Court proceedings, a second affidavit of ██████████ was filed. This affidavit sets out information relating to ██████████, ██████████ and SOS. It contains information that ██████████, ██████████ and SOS have declined to previously provide to Woodside in the course of consultation, communications and meetings that have taken place since around 2022.
- The affidavit contains information about ██████████, ██████████ and SOS' interests, including in relation to "whale dreaming" and songlines. This information is publicly accessible in an online court file. This information was not provided to Woodside in previous consultation, and was asserted it could not be provided due to cultural sensitivity and as a result of a lack of information about the Scarborough EPs and their impacts on ██████████ interests (9). Woodside was therefore surprised to see the information for the first time being provided in a public forum when Woodside has been asking for and consulting with ██████████, ██████████ and SOS in order to hear and discuss the information for at least a year.
- On 11 September 2023, the EDO emailed Woodside confirming the 12 September 2023 meeting and asked Woodside to confirm that the purpose for the meeting is to discuss the Seismic EP to better understand the nature of the activities and ask questions to Woodside (15).
- On 11 September 2023, Woodside emailed the EDO:
  - Confirming that the meeting proposed is to go over the Seismic EP as well as the Scarborough project and answer any further questions their clients have (15, 8, 9).
  - Asking ██████████, ██████████ and SOS to provide questions in advance so that Woodside can have answers ready to share (8, 9).
  - Stating that they would like to provide a refresher on other Scarborough EPs including this EP with the aim to consult and provide ██████████, ██████████ and SOS the opportunity to discuss their interests and any claims and objections that they may have on the broader Scarborough Project footprint (15, 8).
  - Restating Woodside's commitment to ongoing consultation with ██████████, ██████████ and SOS as part of its commitment to ongoing consultation during the life of an environment plan.
- **MEETING:** On 12 September, Woodside met with ██████████, SOS and EDO in Karratha. ██████████ told Woodside that ██████████ sent her apologies as she could not make it and asked for the meeting to go ahead without her. Culturally sensitive and gender restricted content was discussed and has been provided to NOPSEMA separately in accordance NOPSEMA's Managing Gender Restricted Information. The meeting covered all of the Scarborough activities to the extent that is described or discussed below. During the meeting:
  - EDO and ██████████ opened the meeting by stating that ██████████ would like to learn more about the activities covered under the Seismic EP and that she would then revert to Woodside to share her story.
  - Woodside provided a recap of the previous meeting (25 July 2023) and ran through how Woodside had addressed the topics raised during that meeting. Woodside shared the control measures that had been adopted in the Scarborough EPs as a result of consultation with ██████████, ██████████ and SOS. ██████████, SOS and EDO queried whether any control measures have been removed from the Scarborough EPs overtime and what mitigation measures were considered and not

implemented in the EPs (1). Woodside explained that principles of the ALARP process that underpins environmental impact and risk assessment, and that the process generally means building in and improving environmental controls over time (1).

- The trunkline and pipeline route was mentioned a number of times and in the context of topics of concern to ██████████, ██████████ and SOS.
- Throughout the meeting, ██████████ SOS raised concerns and questions, which are summarised below, and were addressed during the meeting:
- How Woodside determines that the potential impacts from an activity are ALARP and acceptable (1).
- A concern about the potential impacts from the Seismic EP on whales (16) and emphasized the importance of these animals (whales) and their deep connection to them (13).
- Who conducted the MAC ethnographic surveys, and whether ██████████ and SOS could be provided with the full report (12).
- How Marine Fauna Observers (MFOs) are able to spot whales from the vessels.
- A request for further information on the Jupiter Fields. Woodside noted that all the Scarborough gas fields are covered in the Scarborough OPP and that this information could be provided to ██████████, ██████████ and SOS (1).
- In response to these concerns and questions, Woodside asked ██████████ and SOS whether there was anything that Woodside might be able to do to help minimise any impacts to cultural values. ██████████ and SOS stated words to the effect that the only thing Woodside could do is stop the project (10).
- During a discussion on the impacts of noise emissions on cetaceans, ██████████ and SOS questioned why there was a focus on pygmy blue whales, rather than humpback whales, which ██████████ and SOS stated they were more concerned about. In particular, ██████████ expressed her desire to see controls adopted for humpback whales, which Woodside considered, implemented and showed to ██████████ and SOS at a subsequent meeting [ref meeting 4 October 2023].
- Woodside encouraged ██████████ and SOS to take some time and read through materials provided to her. Woodside asked whether ██████████ and SOS had any information from her own history and her own knowledge and information that she could share, including the kinds of issues that Woodside should be looking at that are of importance to her. ██████████ and SOS again stated that she could not share any further information until she is provided with the cultural heritage surveys Woodside has had completed. Woodside said they would share the publicly available content from the report, and repeated that ██████████ and SOS would need to speak to MAC if they wanted access to the full report (12).
- ██████████ and SOS indicated her desire to take Woodside employees out to Rosemary Island for an on-Country meeting. Woodside enquired as to the logistics including whether they would need to travel by boat and how long the boat ride would take (14).
- Woodside shared that there are consultation meetings happening in Karratha, Port Headland and Roebourne the following week, and that ██████████, ██████████ and SOS were welcome to attend and ask any questions or share anything then (8, 9).
- Woodside concluded the meeting noting the information that Woodside had committed to providing ██████████, ██████████ and SOS and checking whether there were any other documents to be provided.
- On 13 September 2023, the EDO emailed Woodside thanking them for the meeting on the 12 September 2023. The EDO also stated that they were looking forward to receiving requested information and listed the specific requests in the email. They also reiterated that they expected that certain cultural information divulged in the meeting to remain confidential and gender-restricted, referring to the agreed upon consultation protocols (7). This was not expected by Woodside because at all times, ██████████ and SOS have control to stop a recording and point out that culturally sensitive information is being shared. It was not apparent during the meeting that the information was culturally sensitive and ██████████ at no time asked for the recording to be stopped. In any event, Woodside acknowledged the position and undertook to manage the information sensitively.
- On 13 September 2023, as part of the Federal Court proceedings, a third ██████████ affidavit was filed. This affidavit confirmed that ██████████ “has not been consulted and wishes to be consulted in relation to the Drilling EP (and other Environment Plans relevant to the Scarborough Project that are not the subject of these proceedings)” (8).

Woodside provided the information to [REDACTED], [REDACTED] and SOS by email on 17 September.

**Summary: - correspondence leading to 4 and 5 October meeting**

A significant amount of correspondence was exchanged between Woodside and [REDACTED], [REDACTED] and SOS from 15 September in relation to Woodside's offer to meet on 4 and 5 October to give another opportunity for [REDACTED], [REDACTED] and SOS to provide and discuss information they say they have and that Woodside needs for its Scarborough EPs.

A summary of the correspondence is as follows:

**17 September – 2 October 2023**

- On 17 September 2023, Woodside emailed [REDACTED], [REDACTED] and SOS to agree a way forward to finalise consultation on all Scarborough EPs with the utmost expedition and in a culturally appropriate way.
  - Woodside confirmed the urgency around consultation and offered an opportunity to attend a meeting on country every day (including weekends) during the next week. Woodside also confirmed it is open to discussing and receiving any and all information on all Scarborough EPs. This was acknowledged by EDO (Ref email 19 September 2023 and 20 September) (7,8,9)
  - Given the urgency and given there was no response, the email was followed by phone calls, voice mail and text messages to [REDACTED] and [REDACTED] on 18 September.
  - In this email Woodside confirmed that information provided at [REDACTED], [REDACTED] and SOS' request relating to the DSDMP, CHMP, UWA study and OPP is already publicly available.
  - The information has been previously provided to [REDACTED], [REDACTED] and SOS or is information they were previously aware of. Reading that information is not a reason to delay consultation on the Scarborough Commonwealth EPs
- On 19 September, the EDO sent an email to Woodside and noted that [REDACTED] was unable to meet because of personal circumstances, because her lawyers were heavily occupied with the Federal Court proceedings and because of the large amount of information provided following the 12 September meeting.
- On 20 September 2023, Woodside sent an email to the EDO and reiterated [REDACTED] has stated that she already knows the information that she wishes to provide to Woodside, has received information on each Scarborough EP since at least 2022, through questions and information has shown an understanding of each of the EPs and has been provided the opportunity to discuss each of the EPs at each meeting this year. Woodside requested a meeting by 6 October 2023 at the latest.
- On 20 September, EDO confirmed [REDACTED], [REDACTED] and SOS were available for a meeting on 4 and 5 October and that they would like to visit the islands off Murujuga during this part of consultation and asked Woodside to coordinate logistics. A concern was expressed regarding the amount of information that would need to be reviewed prior to the meeting.
- On 21 September, Woodside agreed to a meeting on 4 and 5 October and agreed to investigate logistics regarding a trip to Rosemary Island. Woodside appreciated the confirmation that consultation would occur on all Scarborough EPs on those 2 meeting dates. Woodside also confirmed that there was no reason for concern regarding information that would need to be reviewed prior to the meeting because [REDACTED] has stated that the information she and SOS want to share with Woodside is currently known to them given she and SOS have stated that they have information they want and are ready to share with Woodside. Woodside also reiterated that [REDACTED], [REDACTED] and SOS have had that information since at least 2022 and have shown an understanding of the content. Woodside asked [REDACTED], [REDACTED] and SOS to confirm items so that Woodside could investigate logistics associated with arranging the meeting, including hiring a boat and venue for the meetings.

- On 25 September, the EDO confirmed that [REDACTED] wishes to visit Rosemary Island as part of the consultation meeting, that [REDACTED] attendance was not yet confirmed, and that further logistics would be confirmed the next day.
- On 27 September, Woodside sent a follow up email because it still had no confirmation from [REDACTED], [REDACTED] and SOS regarding the items that Woodside needed to be confirmed in order for the meetings and vessel hire to progress. Woodside set out a proposed agenda for the 4 and 5 October meetings and some logistical issues. One issue was that the vessel Woodside is investigating has space for [REDACTED] and 3 other attendees [REDACTED] selects. Woodside respectfully also notified [REDACTED], [REDACTED] and SOS that the crew of the vessel was likely to be male and that there were potentially ways to manage the culturally sensitive information out of ear shot of the male crew.
- On 28 September, EDO provided some information regarding travel to Rosemary Island including that [REDACTED] will potentially bring 8 other attendees with her on the boat to Rosemary Island and requiring Woodside to arrange a larger vessel. [REDACTED] noted that Rosemary Island is a culturally significant place and she had included 2 males to attend for the purposes of cultural safety. She also suggested that a third party Appeals Convenor ([REDACTED]) should be included in the trip. She also noted that she did not anticipate there would be any need for the Appeals Convenor or Woodside to share confidential or culturally sensitive information during or on the trip to Rosemary Island.
- On 29 September 2023, Woodside emailed the EDO advising that the recording of 12 September 2023 would be shared with NOPSEMA and confirming that culturally sensitive and gender restricted information would be managed appropriately, in accordance with NOPSEMA *Draft Policy for Managing Gender Restricted Information*
- On 29 September, Woodside arranged a meeting with the external boat provided to undertake a risk assessment (including for health and safety) for the proposed travel by boat to Rosemary Island.
- On 29 September, during the course making preparations for the trip to Rosemary Island, Woodside received strong advice from cultural authorities that because of Rosemary Island's high cultural significance, the cultural authority did not support Woodside convening a meeting at Rosemary Island.
- On 29 September Woodside sent an email to the EDO. Woodside said that it had received broader cultural advice that Rosemary Island has high cultural significance and that Woodside has been strongly cautioned against convening a meeting at that location because of cultural sensitivity and safety concerns. Woodside suggested Hearson Cove as an alternative meeting location for [REDACTED], [REDACTED] and SOS to share any and all remaining information on the Scarborough EPs. Woodside also stated that it did not think it would be appropriate for the Appeals Convenor to attend, given the purpose of the meeting and questioned why three EDO lawyers needed to be in attendance.
- On 2 October, EDO emailed Woodside, expressing [REDACTED] disappointment at Woodside's decision regarding Rosemary Island and confirming arrangements for the meeting on 4 and 5 October.
- On 2 October, Woodside emailed the EDO regarding the meeting on 4 and 5 October explaining the decision to not progress with the meeting on Rosemary Island. The email also conveyed that Woodside's priority was to understand the cultural values that [REDACTED], [REDACTED] and Save Our Songlines assert that Woodside needed to know for Scarborough EPs.
- Woodside replied on 3 and 4 October confirming that it takes cultural safety very seriously and confirmed that Ngaarda Ngarli community leaders have strongly discouraged Woodside from attending Rosemary Island. Other meeting items and logistics were confirmed.

#### Meeting on 4 and 5 October 2023

- MEETING: On 04 October 2023 Woodside met with [REDACTED] and SOS in Karratha (8, 9)
  - Prior to meeting on 4 October 2023, Woodside arranged a meeting room at the Karratha Red Earth Arts Precinct and arranged catering. As a gesture of goodwill, Woodside communicated before the meeting and arranged coffees for attendees.
  - Woodside arrived at the Red Earth Art Precinct ahead of the meeting to prepare the room for the meeting and was ready, willing and able to commence at the agreed start time of 10am. Woodside remained at all times, at the meeting room and available to consult on the Environment Plans. A Woodside employee left the meeting for around 15 minutes at a later stage in the meeting in order, at short notice, to re-book a vessel to facilitate a visit to Rosemary Island so that a trip could be made that circumnavigated the island.
  - [REDACTED], SOS and EDO arrived at around 10.20am. They exited the meeting a number of times during the allocated meeting time for private conversations, time out and to manage energies that were being felt. In total, [REDACTED] spent around two hours outside the meeting.
- Opening remarks
  - [REDACTED] and EDO confirmed that [REDACTED] would not attend the meeting and that [REDACTED] was not feeling the best as she was managing some family and other circumstances.
- Rosemary Island Trip
  - There was discussion regarding [REDACTED] preference to travel to Rosemary Island and Woodside's position that could not attend because of the strong cautions given to Woodside not to attend including for spiritual and cultural health and safety reasons.
  - Woodside's aim was to maintain integrity and respect for all first nations people with whom it consults and to present the information in a balanced manner. [REDACTED] stated that she found Woodside's change in position on attending Rosemary Island to be disrespectful. In particular, [REDACTED] was offended by the fact that Woodside had spoken to other person(s) about her consultation with them.
  - [REDACTED] asked Woodside to confirm who specifically had told Woodside not to attend the island and expressed concern around this and referenced a spiritual war that was going on
  - During the meeting, [REDACTED] and SOS shared their perspective on matters leading up to the meeting, including their disappointment about the cancellation of the Rosemary Island trip. Woodside confirmed they were following meeting protocols and showing respect to the Traditional Custodian groups for the area (7, 14). Woodside suggested alternative meeting locations and other options, at a previous meeting [REDACTED], [REDACTED] and SOS had indicated that they would tell their story at Hearson Cove. The offer to meet at another place or meet at an alternative location on-Country of cultural significance where Woodside could receive the information were rejected by [REDACTED] and SOS - all options suggested by Woodside were rejected including (14):
    - A suggestion was made by Woodside that they use the boat Woodside had secured to circumnavigate Rosemary Island (but not disembark onto Rosemary Island), allowing [REDACTED] and SOS to share her information. [REDACTED] and SOS agreed that this could be a compromise. Woodside contacted [REDACTED] during the meeting to see if they had a boat available for 5th Oct that could circumnavigate Rosemary Island to allow for consultation on sea country to proceed, without landing on the Island. [REDACTED] confirmed that they had suitable vessel available, and made special efforts to stand-up a marine crew. When Woodside confirmed this was available, [REDACTED] rejected the offer and declined to meet.
    - Another option suggested was that [REDACTED] and SOS visit Rosemary Island and produce an audio recording of their story; and
    - A meeting at Hearson Cove, as Hearson Cove had previously been identified as culturally safe by [REDACTED], [REDACTED] and SOS and a place where they had (in March 2023) shared information with Woodside.
- Presentation and Discussion on Scarborough EPs

- During the meeting, Woodside presented on each of the Scarborough EPs (D&C, SITI, Subsea and Seismic) and controls suggested to demonstrate how Woodside had addressed each of the topics and cultural values previously raised by ██████████, ██████████ and SOS (13, 17, 19) and the relevant controls in place for each of the SCA EPs activities. Woodside displayed a table on-screen during the meeting which contained the previously expressed areas of interest to ██████████, ██████████ and SOS and controls pertaining to each of these interests. When Woodside went to keep discussing these controls after talking through the D&C updates to cultural heritage and noise controls, Woodside was stopped by EDO and questioned why controls were being discussed, and not EP overview / content. In reviewing the newly adopted controls that were able to be covered, ██████████, SOS and EDO provided views on some controls including the cultural awareness crew training control that had been included in all Scarborough EPs. ██████████ and SOS' feedback on the control was adopted (1).
- While Woodside was presenting on the controls implemented for humpback whales, ██████████ recognized the words were those she had said in the previous meeting with Woodside and appeared pleased that her words were used to describe the controls in the EP (1). ██████████ and SOS noted that all marine animals are important, not just whales. Woodside asked ██████████ and SOS to clarify, as in the previous meeting on 12 September ██████████ and SOS had specified humpback whales as being of particular importance. ██████████ and SOS disagreed and said she had always said all animals and plants, but whales and turtles are bigger and more apparent (16).
- On request of ██████████ and SOS, Woodside presented on the Scarborough activities (Drilling, Seabed Intervention and Trunkline Installation and Subsea Infrastructure Installation), showing the presentation that had been prepared for the 25 July 2023 meeting when Woodside was ready to present on all EPs and was directed to only discuss the Seismic EP.
- Woodside provided an overview of the activity. Woodside described the trunkline route and proximity to existing infrastructure, and controls protecting the environment during installation ██████████ and SOS had various questions, relating to both the drilling, subsea installation and SITI EPs specifically, including (1);
- ██████████ stated she had watched a lot of spills and was concerned that they don't get contained. Woodside responded that gas released at 900m (Scarborough well depths) would dissolve in the water column and not result in a typical oil spill scenario, but that the greater risk for the Scarborough activities including his from a spill perspective is diesel spill from vessels caused by vessel collisions for example. Woodside provided an overview of a credible spill scenario from a vessel collision and discussed the Environment that Might be Affected (EMBA) (1).
- Whether NOPSEMA approves the oil spill preparedness and response plans; Woodside confirmed that these plans are assessed and approved as part of the Environment Plan assessment process (1).
- Woodside provided an overview of the proposed Trunkline and explained the process for selecting the Trunkline route and Trunkline construction methodology. ██████████ ██████████ and SOS spent some time looking at the figures showing where the Trunkline passed through the Montebello MUZ and the various marine park classifications around the Montebello Islands, and sought to understand that further.. Woodside provided an overview of the dredging activity for the offshore borrow ground area, and explained the logic behind the focus on environmental impacts from dredging in that EP.
- Meeting conclusion
- Woodside again emphasized a willingness to listen to ██████████ and SOS story and keenness to ensure her cultural values are protected.
- Towards the end of the meeting, Woodside confirmed that a boat was available to circumnavigate Rosemary island on 5 October as was the agreed compromise position. ██████████ said words to the effect that this was not good enough, and after a brief discussion on the logistics of the boat trip to Rosemary Island, including raised voices and a significant aggressive and emotional diatribe by ██████████, the meeting ended (8, 9, 14).
- After the close of the meeting, Woodside informed EDO lawyers that another option available for ██████████, SOS and ██████████ to share her story was to share it directly with NOPSEMA (9).
- 5 October meeting
- Woodside attended the Read Earth Arts Precinct ready, willing and able to engage in consultation on 5 October 2023. Despite Woodside confirming it was ready for the meeting, ██████████ and EDO declined to attend.

#### Correspondence following the 4 October meeting

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A summary of the correspondence is as follows:

- Woodside and EDO exchanged emails following the meeting, noting that accounts and take-aways from the meeting differed.
- On 4 October 2023, EDO emailed Woodside stating that each of the Scarborough EPs, including this EP, were not discussed “substantively” with ██████████ before the meeting today (4 October 2023), other than the Seismic EP discussed on 25 July 2023 meeting, and that it was the first time Woodside has provided a “substantive” presentation describing the activities described in the D&C EP, SITI EP and Subsea EP.
- ██████████, through EDO, emphasised the importance of understanding the impacts and controls relating to animals affected by the activities (1).
- EDO stated that ██████████ did not agree to meet again on the 5th October in Karratha and ██████████ could not proceed with the proposed agenda, as she could not share the story she wanted to share with Woodside anywhere other than on Rosemary Island. ██████████ wished to engage in consultation and share information about her story and how her functions, interests and activities may be affected, she did not wish to meet in those circumstances (7, 8, 9, 14).
- EDO re-emphasised the importance of attending Rosemary Island for purposes of ██████████ sharing information (7).
- On 5 October 2023 Woodside emailed EDO acknowledging the email sent on 4<sup>th</sup> Oct 2023 and stating that Woodside’s understanding of the meeting differs. Woodside enquired if there were alternative approaches for ██████████ to share her story from Rosemary Island, such as recording her story or inviting the Regulator to attend and that they remain open to understanding how the issue could be progressed (7, 8, 9, 14).
- On 5 October 2023 EDO emailed Woodside stating that ██████████ and EDO would not be attending the meeting that day.
- ██████████ considered Woodside had seriously damaged the relationship of trust and confidence required for consultation. EDO were instructed to say that ██████████ was open to the prospect of future meetings if the relationship was able to be repaired (7, 8, 9, 14).
- On 5 October 2023 Woodside emailed EDO sharing their disappointment that ██████████ and SOS would not be attending the meeting that day. Woodside confirmed employees were at the Red Earth Arts Precinct centre, as agreed, and were ready, willing and able to participate in the meeting, and that this was another opportunity for ██████████ to share her information on the Scarborough EPs. Woodside re-iterated that there was no disrespect intended towards ██████████, that they had accommodated the consultation requests put forward by ██████████, making themselves available and demonstrating they were ready to listen. Woodside stated that there was a clear limit where consultation in the method proposed was not possible, including instances where there were unacceptable health and safety risk, as was the case in the instance of Woodside employees going onshore for a meeting with ██████████ and SOS at Rosemary Island when it was advised not to, due to cultural sensitivity and cultural safety risks. Woodside reiterated that Woodside employees had received strong advice on cultural safety and did not have cultural permission to convene a meeting with ██████████ or SOS on Rosemary Island and asked again if there were alternatives available for ██████████ to share her information. A link to the NOPSEMA draft policy for managing gender restricted information (PL2098) was provided (7, 8, 9, 14).
- On 5 October 2023, EDO sent a letter on behalf of ██████████ to NOPSEMA, cc’d Woodside, which:

- Acknowledged that, in ██████████ view, consultation with Woodside began in October or November 2022, (3);
- alleged that Woodside had “shared information regarding consultation with individuals outside of those involved in consultation” and that this “may be a breach of the cultural protocol agreed between Woodside and ██████████ to enable consultation to occur in a culturally safe manner”.
- Alleged that Woodside presented on matters outside of the agreed agenda, being control measures Woodside had adopted in each of its environment plans following the 12 September 2023 meeting;
- that ██████████ could not share information directly with Woodside in a culturally safe manner and that the trust and respect necessary for genuine consultation had been breached (8, 9, 14). (11).
- Sought to arrange a meeting with female representatives of NOPSEMA at Rosemary Island or “another place of equivalent cultural significance, where she is able to share her information in a culturally safe manner”.
- On 9 October 2023 Woodside emailed NOPSEMA stating that Woodside disagreed with a number of statements contained within the EDO letter sent to NOPSEMA and, accordingly, wished to correct the record and provide context. Woodside had consistently provided opportunities for ██████████, ██████████ and SOS to share information and engage in two-way dialogue and had attempted to accommodate the varied consultation requests made by ██████████, ██████████ and SOS (7, 8, 9, 14).

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>(1) Questions raised and addressed in meetings or in subsequent emails:</p> <ul style="list-style-type: none"> <li>- Whether the Scarborough activity included fracking</li> <li>- How credible spill scenarios are determined and who determines these.</li> <li>- Oil spill modelling Woodside undertakes.</li> <li>- Freshwater environments in the EMBA</li> <li>- Whale migration patterns</li> <li>- Seagrass distribution</li> <li>- Acoustic emissions, particularly from seismic acquisition.</li> <li>- How MFOs observe whales in the distance from the vessels.</li> <li>- Where Woodside sources information relating to species, migration patterns and Biologically Important Areas, particularly those relating to whales.</li> <li>- Credibility of the science underpinning Woodside’s assessment of noise impacts on species (particularly in reference to the Scarborough seismic EP).</li> <li>- The nature of the credible spill scenario associated with the various Scarborough</li> </ul>	<p>(1) Woodside has addressed the questions raised by SOS, ██████████ and ██████████ in meetings and in subsequent email responses [Ref for example meetings on 14 March 2023; 25 July 2023; 12 September 2023; 4 October 2023 and correspondence for example 17 September 2023 email from Woodside to EDO].</p> <p>(2) Woodside confirmed the extraction of Scarborough gas for onshore processing is not within the scope of the activity described in this EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for this EP but may be evaluated in other Scarborough EPs as appropriate. Woodside confirmed that emissions from the activities covered by this EP are of a scale and physical remoteness from Murujuga’s rock art that no credible impact pathway is foreseen. Woodside advised that no rock art will be displaced as a result of the Scarborough project. [For example</p>	<p>(1) Not required. Existing controls considered sufficient, as described in Section 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 features or heritage values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.15).</p> <p>(2) Not required</p> <p>(3) Not required</p> <p>(4) Not required</p> <p>(5) Not required</p> <p>(6) Not required.</p> <p>(7) Not required.</p> <p>(8) Not required.</p> <p>(9) Not required.</p>

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<p>activities (including this EP), and underlying information on how oil spill modelling is undertaken.</p> <ul style="list-style-type: none"> <li>- Whether NOPSEMA approves OSPRMA for EPs.</li> <li>- Whether ██████ could seek her own external experts to provide opinion on the EPs.</li> <li>- Additional information on the Jupiter field</li> <li>- Environmental controls included in the EPs, including how these have changed overtime, and what controls have been considered and not implemented.</li> <li>- Environmental impacts from Scarborough activities and how Woodside determines that environmental impacts are at an ALARP and acceptable level.</li> </ul> <p>(2) Threat posed to Murujuga rock art by Scarborough LNG and industrialization on the Burrup, and values associated with:</p> <ul style="list-style-type: none"> <li>- Murujuga</li> <li>- Murujuga rock art</li> </ul> <p>(3) Murujuga Aboriginal Corporation (MAC) are subject to gag clauses</p> <p>(4) Save Our Songlines, ██████ and ██████ desire to be consulted as a relevant person</p> <p>(5) Need for EPs to consider cultural heritage impacts, both direct and indirect.</p> <p>(6) MAC does not represent the interests of Save Our Songlines, ██████ and ██████ Save Our Songlines, ██████ and ██████ have interests that are separate and distinct from those of MAC.</p> <p>(7) Sensitive information shared by Save Our Songlines, ██████ and ██████ was to be treated with high sensitivity and confidentiality. Meeting protocols agreed by both parties should be met.</p> <p>(8) Save Our Songlines, ██████ and ██████ have not been afforded reasonable opportunity or sufficient information for consultation.</p> <p>(9) Save Our Songlines, ██████ and ██████ have interests they wish to share with Woodside, for</p>	<p>email from Woodside 5 Jan 2023 and letter dated 17 April 2023]</p> <p>(3) Woodside confirmed that none of Woodside’s agreements with Traditional Custodians include ‘gag clauses’ or restrictions on voicing opinions on its projects. Woodside confirmed it 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. [For example email from Woodside 5 Jan 2023 and letter dated 17 April 2023] In any event, Woodside notes that to the extent that this assertion is considered an objection or claim by ██████, ██████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates.</p> <p>(4) Woodside has consulted extensively with ██████, ██████ and Save Our Songlines on both the proposed activity and the broader Scarborough project. Woodside has confirmed ██████, ██████ and Save Our Songlines are relevant for this EP and have responded to all requests for further information.[For example, see consultation record in this EP; letter dated 3 July 2023] In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████, ██████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(5) Woodside confirmed that EPs assess cultural heritage impacts, including both direct and indirect impacts and risks associated with the PAP. Woodside confirmed that the PAP is outside the National Heritage Place and anticipated boundary of the Murujuga Cultural Landscape World Heritage Property. As above (2), Woodside has confirmed that the extraction of Scarborough gas for onshore processing is not within the scope of the activity described in this EP and therefore that indirect impacts and risks arising from</p>	<p>(10) Not required (existing controls are sufficient)</p> <p>(11) Not required.</p> <p>(12) Not required.</p> <p>(13) Woodside has considered ██████ and SOS’s feedback and updated Section 4.9 to record topics of interest and cultural value, including those relating to whales. As a result of consultation with ██████, ██████ and SOS, Woodside has updated the noise adaptive management control relating to pygmy blue whales to also include humpback whales (C 6.5).</p> <p>(14) Not required.</p> <p>(15) Not required.</p> <p>(16) Woodside has considered topics raised by ██████, ██████ and SOS’s as to interests and updated Section 4.9 to record these. These are assessed in 6.10 with appropriate controls implemented. 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 features or heritage values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.15).</p> <p>(17) Not required (existing controls adequate)</p> <p>(18) Woodside has considered ██████, ██████ and SOS’s feedback and updated Section 4.9 to record topics of interest and cultural values, including songlines and energy lines. These are assessed in Section 6.10 with appropriate controls implemented. At</p>
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<p>consideration in Woodside's Scarborough Environment Plans.</p> <p>(10) Objection to the Scarborough gas project, including the view that no controls could be implemented to minimise potential impacts to cultural values.</p> <p>(11) Consultation with Save Our Songlines, ██████████ and ██████████ is still in its early stages [Ref: EDO letter 10 August 2023].</p> <p>(12) Request for MAC ethnographic survey results to be shared with Save Our Songlines, ██████████ and ██████████. Requests to know who from MAC participated in the ethnographic surveys.</p> <p>(13) Cultural features associated with whales.</p> <p>(14) Need for Save Our Songlines, ██████████ and ██████████ to share their cultural knowledge and story on Country.</p> <p>(15) That it is not appropriate for Woodside to consult on the Scarborough project as a whole (suite of 4 EPs) in each meeting.</p> <p>(16) Demonstrated an interest in:</p> <ul style="list-style-type: none"> <li>- Marine animals</li> <li>- Seagrass and dugongs</li> <li>- Pygmy blue whales</li> <li>- Whales</li> <li>- Turtles</li> <li>- Underwater heritage</li> <li>- Where saltwater and freshwater meet</li> <li>- Potential impacts of the Scarborough project activities on whales (particularly the seismic activity).</li> <li>- Sharks</li> <li>- Water quality</li> <li>- Seabirds</li> <li>- Plankton</li> <li>- Pelagic fish</li> </ul> <p>(17) The need for Woodside to consider all animals in EP impact assessments.</p> <p>(18) Cultural features associated with songlines, dreaming and energy lines.</p>	<p>the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for this EP but may be evaluated in other Scarborough EPs as appropriate. [For example, see email from Woodside 26 August 2022 and 5 Jan 2023 and letter dated 17 April 2023]</p> <p>(6) Woodside has consulted with ██████████, ██████████ and SOS separately from MAC and other relevant representative bodies. [See consultation record] In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates.</p> <p>(7) Sensitive information has been appropriately handed by Woodside in accordance with agreed protocols. Woodside has agreed with requests from ██████████, ██████████ and SOS in relation to meeting protocols. This has included significant efforts by Woodside to allocate women subject matter experts to prepare and attend meetings with ██████████, ██████████ and SOS where matters are otherwise managed by male subject matter experts for Woodside [For example, see emails setting up meetings on 14 March 2023; 25 July 2023; 12 September 2023 and 4 October 2023. See emails on 3, 4 and 5 October 2023] In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(8) Woodside has, since at least 2022, provided information to ██████████, ██████████ and SOS to allow an informed assessment of the possible consequences of the activity on their functions, interests or activities in their Traditional Owner and eNGO capacities. The information provided by Woodside meets the requirements of Regulation 11A for the reasons set out above. ██████████, ██████████ and SOS have been provided a reasonable time and</p>	<p>this stage, Woodside has not been provided with specific information on these potential values so as to enable a more fulsome assessment. In lieu of additional information on these values, Woodside has implemented a control that inductions for all relevant marine crew will include information on cultural values, including tangible and intangible cultural heritage (PS 16.4.1). This control was updated further during the October 4<sup>th</sup> 2023 meeting based on feedback received during the meeting that the control should be timebound.</p> <p>(19) Woodside has considered ██████████, ██████████ and SOS's feedback and updated Section 4.10 to record indicated topics of interest and cultural values. These are assessed in Section 6.9, with appropriate controls implemented.</p>
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<p>(19) Cultural values publicly available in the Affidavits of ██████████ (September 2023) and Concise Statement (Ref. Section 4.9.1):</p> <ul style="list-style-type: none"> <li>- Murujuga</li> <li>- Rock art</li> <li>- Caring for Country</li> <li>- Bungarra</li> <li>- Eagle</li> <li>- Kangaroo</li> </ul>	<p>opportunity to consult in relation to this EP and all of the Scarborough EPs. [Please see consultation record]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates.</p> <p>(9) Woodside has provided a reasonable period of time and ample opportunity for ██████████, ██████████ and SOS to provide the information that they say Woodside requires for its EPs. Despite providing that reasonable period of time and opportunity, ██████████, ██████████ and SOS have not provided the information. Woodside has consistently sought to provide a culturally safe space for ██████████, ██████████ and SOS to share the information they wish to share with Woodside. Throughout consultation, ██████████, ██████████ and SOS have continued to state that they have additional information they wish to tell Woodside and that they say Woodside requires for its Environment Plans, and, despite Woodside offering ample opportunity, have expressly refused to provide information to Woodside.</p> <p>a. [Ref for example 17 April 2023 letter, letters setting up each meeting on 14 March, 25 July, 12 September and 4 October and most recently 3, 4 and 5 October 2023 correspondence]. There is a limit to consultation – Woodside is not required to wait indefinitely to receive this information. On a number of occasions, ██████████, ██████████ and SOS have declined to provide the information to Woodside and have instead provided information publicly [Affidavits of ██████████ September 2023] or offered to provide the information to others [Ref: letter to NOPSEMA 26 September 2022; letter to NOPSEMA 4 October 2023]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an</p>	
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	<p>objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(10) Woodside considers that ██████████, ██████████ and SOS have expressed a fundamental objection to the Scarborough project, including this EP. Despite this, Woodside has continued to engage in good faith to understand what could be done to minimise any potential impacts to cultural interests and values held by ██████████, ██████████ and SOS. [See for example, consultation record and discussions with ██████████, ██████████ and SOS on their views regarding controls in place to manage topics of concern to them – Ref for example 12 September and 4 October meetings].</p> <p>(11) This is refuted in the letter from EDO dated 4 October 2023 which confirms consultation commenced in at least 2022 [EDO 4 October 2023 letter]. Woodside considers that Consultation under Reg 11A is complete in circumstances because sufficient information, a reasonable period of time and opportunity have been provided to ██████████, ██████████ and SOS in their individual Traditional Owner and eNGO capacities. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates.</p> <p>(12) Woodside 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 respects this position and does not disclose this information. This</p>	
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	<p>information is held by representative institutions and may be disclosed by them where they consider it appropriate to do so. Woodside has provided Save Our Songlines, ██████████ and ██████████ with the outcomes of these surveys to the extent that these can be shared publicly, consistent with the information in the public domain (i.e. where culturally appropriate). [Ref for example, 14 March 2023 and following correspondence]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(13) Woodside understands that some species hold spiritual and cultural importance to ██████████, ██████████ and SOS. Woodside has implemented controls to reduce potential risks and impacts to ecological and cultural values to ALARP and to an acceptable level, and has discussed with ██████████, ██████████ and SOS, controls that Woodside has put in place to manage impacts and risks relating to their spiritual and cultural connection to the environment. [Ref for example, 25 July 2023 meeting and following correspondence, 12 September 2023 meeting and following correspondence as well as 4 October meeting]</p> <p>(14) Woodside has consistently sought to make arrangements for ██████████, ██████████ and SOS to be able to share their cultural knowledge and stories in a culturally appropriate manner, including offering and attending several on Country meetings [ref: 14 March, 25 July, 12 September and 4 October 2023 meetings]. Woodside also sought to meet the requests of ██████████ and SOS to attend an on-Country meeting at Rosemary Island, but was cautioned by the relevant cultural authority that Woodside did not have cultural permissions or spiritual protection to do so. Woodside and ██████████ reached a compromise relating to circumnavigating Rosemary Island rather than going on shore. ██████████ later refused this compromise</p>	
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	<p>and refused to share information [Ref meeting on 4 October 2023]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(15) ██████████, ██████████ and SOS originally sought to consult on all Scarborough EPs at once and confirmed they have information and “objections” to share on all Scarborough EPs as early as September 2022. [Ref correspondence and information in the public domain from around February 2022, July 2022, 26 August 2022 and 4 January 2023] From about June 2023, this position changed and ██████████, ██████████ and SOS expressly directed Woodside to consult on individual EPs. Woodside has been ready, willing and able to consult on all Scarborough EPs (including this EP) since consultation commenced, and prepared materials to consult on all EPs – and attempted to present these materials – however was directed by EDO to only talk about Seismic, or to describe activities and not cover controls [Ref. 12 September 2023 meeting and 4 October 2023 meeting]. In any event, as above at (3), Woodside notes that to the extent that this assertion is considered an objection or claim by ██████████, ██████████ or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates</p> <p>(16) ██████████, ██████████ and SOS have not expressly confirmed their interests and rather, have raised topics of interest to them. Woodside has considered ██████████, ██████████ and SOS’s topics of interest and shared relevant information with ██████████, ██████████ and SOS relating to these interests, including controls put in place to manage risks and impacts to them, during meetings and subsequent emails. [Ref for example, 25 July 2023 meeting and following correspondence, 12 September 2023 meeting and following correspondence; 4 October 2023 meeting]</p>	
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	<p>(17) Woodside has confirmed that consideration is given to all marine animals in the Environment Plan preparation process. Marine fauna that may credibly be impacted by both direct or indirect activities are considered in the impact assessment (s. 6). Woodside has also stepped through these issues during consultation meetings [Ref for example 12 September 2023 meeting and 4 October 2023 meeting]</p> <p>(18) Woodside understands that songlines and energy lines to hold personal spiritual and cultural value individually (rather than communally) to ██████████, ██████████ and SOS. Woodside has consistently sought to understand the nature of these values to ensure impacts to these values can be minimised. ██████████, ██████████ and SOS have declined to provide further information on these values. In any event, Woodside has sought to include controls that seek to reduce risks and impacts to ALARP and acceptable levels and has sought ██████████ and ██████████ and SOS' views on the proposed controls. [Ref for example, 12 September 2023 meeting and following correspondence; 4 October 2023 meeting]</p> <p>(19) Through the publicly available Affidavits of ██████████ (August and September 2023) and Concise Statement, Woodside has been made aware that ██████████, ██████████ and SOS may hold cultural and spiritual values associated with caring for Country, bungarra, eagle and kangaroo. Bungarra, eagles and kangaroos have not been identified as species credibly impacted by either direct or indirect activities associated with this proposed activity. Woodside has assessed potential risk/impact of the activity on receptors raised. Woodside has not been provided with any additional detail regarding values associated with Caring for Country. However, 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</p>	
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	appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7.7</b> ).	
<b>Research institutes and local conservation groups or organisations</b>		
<b>Protect Ningaloo</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to Protect Ningaloo on 1 February 2023 based on their function, interest, and activities..</li> <li>• Woodside sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided Protect Ningaloo with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 1 February 2023, Woodside emailed Protect Ningaloo advising of the proposed activity (Appendix F, reference 1.92) and provided a Consultation Information Sheet. <ul style="list-style-type: none"> <li>- Woodside extended an opportunity to meet to discuss the proposed activity.</li> </ul> </li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 1.146).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Cape Conservation Group</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> </ul>		

<ul style="list-style-type: none"> <li>• Consultation information provided to Cape Conservation Group on 12 February 2023 based on their function, interest, and activities..</li> <li>• Woodside sent a follow up email seeking feedback on the proposed activities.</li> <li>• Woodside has provided Cape Conservation Group with the opportunity to provide feedback over a 6 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 1 February 2023, Woodside emailed Cape Conservation Group advising of the proposed activity (Appendix F, reference 4.21) and provided a Consultation Information Sheet.             <ul style="list-style-type: none"> <li>- Woodside extended an opportunity to meet to discuss the proposed activity.</li> </ul> </li> <li>• On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.29).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP)</b>		
<p>Woodside considers it has discharged its obligations for consultation under Regulation 11A(1). Sufficient time, information and opportunity has been provided as summarised below:</p> <ul style="list-style-type: none"> <li>• Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>• Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>• Consultation information provided to NERA on 11 November 2022 based on their function, interest, and activities.</li> <li>• Woodside has addressed and responded to NERA over a 9 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 11 November 2022 Woodside emailed NERA advising of the proposed activity (Appendix F, reference 2.14) and provided a link to the Consultation Information Sheet.</li> <li>• On 22 February 2023, Woodside emailed NERA a reminder that consultation is closing soon (Appendix F, reference 5.15).</li> <li>• On 24 February 2023, NERA thanked Woodside for keeping CSEP up to date and confirmed they have no comments and no planned activities for 2023.</li> <li>• On 28 February 2023, Woodside emailed and confirmed they will provide NERA with commencement and cessation of activity notifications relating to the proposed activities.</li> </ul>		

<ul style="list-style-type: none"> <li>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.</li> <li>On 2 May 2023, Woodside emailed NERA to thank NERA for advice that the Collaborative Seismic EP has been withdrawn and will no longer go ahead. Woodside confirmed it will remove the CSEP from its relative person consultation for future EPs on this basis.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>NERA has no comments but would like to be kept up to date.</p>	<p>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 <b>Section 7</b>).</p>	<p>Woodside has consulted NERA in the course of preparing this EP. Woodside has assessed the claims or objections raised by NERA. No additional measures or controls have been put in place.</p> <p>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.</p>
<b>University of Western Australia (UWA)</b>		
<p>Woodside considers it has discharged its obligations under regulation 11A by providing consultation materials and conducting various forms of engagement as set out in <b>Section 5.8</b> and below.</p> <ul style="list-style-type: none"> <li>Consultation Information Sheet publicly available on the Woodside website since August 2021.</li> <li>Woodside published advertisements in a national, state, and relevant local newspapers on 19 October 2022 advising of the proposed activities and requesting comments or feedback.</li> <li>Consultation information provided to UWA on 11 November 2022 based on their function, interest, or activities.</li> <li>Woodside addressed and responded to UWA over a 9 month period.</li> </ul> <p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>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 2.13)</li> <li>On 17 November 2022, UWA responded and noted:</li> <li>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;             <ul style="list-style-type: none"> <li>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; and</li> <li>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.</li> </ul> </li> </ul>		

<ul style="list-style-type: none"> <li>- 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.</li> <li>• On 18 November 2022, UWA emailed Woodside:             <ul style="list-style-type: none"> <li>- UWA also shared that the Madeleine Shoals have been added to the cultural landscape boundaries of the World heritage nomination dossier.</li> </ul> </li> <li>• On 14 December 2022, Woodside emailed UWA and arranged a time to meet.</li> <li>• 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:             <ul style="list-style-type: none"> <li>- 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</li> <li>- 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)</li> <li>- The full extent of the terrain was not captured given time and cost constrains, and</li> <li>- The current mapping has the Shoals mapped ~100 m from the marine park boundary and ~1.3 km from the borrow ground boundary</li> <li>- UWA also acknowledged Woodside may already have mapping of the borrow ground that indicates no exposed rock or hard material</li> <li>- Woodside confirmed extensive studies of the borrow ground and adjacent marine park found no hard material and a substantial depth of sand</li> <li>- UWA concluded it has submitted for additional funding for further exploration of Madeleine Shoals. Woodside responded to the organisation’s feedback during the meeting.</li> </ul> </li> <li>• On 6 February 2023, Woodside emailed UWA advising of the proposed activity (Appendix F, reference 4.40) and provided an updated Consultation Information Sheet.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>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.</p> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>UWA has advised that the proposed Scarborough activities are predominantly outside the scope of interest for UWA.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on UWA’s functions, interests or activities.</p> <p>No additional measures or controls are required.</p>

**Table 2: Engagement Report with Persons or Organisations Assessed as Not Relevant**

<b>Commonwealth Commercial fisheries and representative bodies</b>		
<b><i>Australian Southern Bluefin Tuna Industry Association (ASBTIA)</i></b>		
<p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 31 August 2021, Woodside emailed ASBTIA advising of the proposed activity (Appendix F, reference 1.16) and provided a Consultation Information Sheet and fisheries maps (Appendix F, reference 1.22 and 1.23).</li> <li>On 3 February 2023, Woodside emailed ASBTIA on the proposed activity (Appendix F, reference 4.34) and provided a Consultation Information Sheet and fisheries maps.</li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.11).</li> </ul>		
<b><i>Summary of Feedback, Objection or Claim</i></b>	<b><i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i></b>	<b><i>Environment Plan Controls</i></b>
No feedback, objections or claims received despite follow up.	<p>Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP.</p> <p>No additional measures or controls are required.</p>
<b><i>Pearl Producers Association</i></b>		
<p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 31 August 2021, Woodside emailed Pearl Producers Association advising of the proposed activity (Appendix F, reference 1.13) and provided a Consultation Information Sheet and fisheries maps (Appendix F, reference 1.23).</li> </ul>		
<b><i>Summary of Feedback, Objection or Claim</i></b>	<b><i>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</i></b>	<b><i>Environment Plan Controls</i></b>
No feedback, objections or claims received despite follow up.	<p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	<p>Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in <b>Section 4.9.2</b> of this EP.</p> <p>Woodside will provide notifications to AFMA, DAFF – Fisheries, DPIRD, WAFIC, CFA, Recfishwest and relevant</p>

		Fishery Licence Holders that have the potential to be directly impacted by planned activities in the Operational Area (see Table 4-28) prior to the commencement and at the end of the activity, as referenced as <b>PS 1.4</b> in this EP. No additional measures or controls are required.
<b>Other non-government groups or organisations</b>		
<b>Australasian Centre for Corporate Responsibility (ACCR)</b>		
<b>Summary of information provided and record of consultation:</b>		
<ul style="list-style-type: none"> <li>• On 30 September 2022, Woodside emailed ACCR advising of the proposed activity (Appendix F, reference 2.4) and provided a Consultation Information Sheet. Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the ACCR public website. Woodside noted:             <ul style="list-style-type: none"> <li>- It has reviewed ACCR's online public campaign in relation to the activity defined in the SITI EP and notes that content generally relates to impacts and risks of the Scarborough Project to climate change and greenhouse gas (GHG) emissions.</li> <li>- It confirms concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the SITI EP which assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, 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 SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate.</li> <li>- GHG emissions associated with the SITI activity (i.e. fuel combustion from project vessels) are considered in Section 6.6.5 of the SITI EP.</li> <li>- Woodside extended an opportunity to meet to discuss the proposed activity.</li> </ul> </li> <li>• On 7 October 2022, Woodside sent a follow up email.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	<p>Woodside has assessed claims and objections raised on the ACCR public website that cover topics relevant to the proposed activity, where appropriate and provided responses to ACCR (shown above).</p> <p>Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b>).</p>	No additional measures or controls are required.

**The Climate Council (TCC)**

**Summary of information provided and record of consultation:**

- On 30 September 2022, Woodside emailed TCC advising of the proposed activity (Appendix F, reference 2.11) and provided a Consultation Information Sheet. Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the TCC’s public website that addressed the following topics relevant to the proposed activity, where appropriate:
  - Impacts and risks related to climate change and GHGs:
    - Woodside confirmed concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the SITI EP which assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, 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 SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for this EP but may be evaluated in Scarborough EPs as appropriate.
    - GHG emissions associated with the SITI activity (i.e., fuel combustion from project vessels) are considered in Section 6.6.5 of the EP.
    - Woodside extended an opportunity to meet to discuss the proposed activity.
- On 7 October 2022, Woodside sent a follow up email.

**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 assessed claims and objections raised on the TCC public website that cover topics relevant to the proposed activity, where appropriate and provided responses to TCC (shown above).  
 Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).

No additional measures or controls are required.

**Doctors for the Environment Australia (DEA)**

**Summary of information provided and record of consultation:**

- On 1 February 2022 during the course of preparing the EP, DEA self-identified and provided comment on the broader Scarborough development and requested to be consulted on the proposed activity:



- DEA believes it is a relevant organisation due to its membership being comprised of medical professionals who deal with people impacted directly and indirectly by climate change e.g. youth, elderly, First Nations people, people from low socioeconomic backgrounds, disabled people, those with disabilities, pre-existing medical conditions and people who live in remote and rural communities.
- DEA believe that climate change is being called “the greatest global health threat of the 21st century”. In Australia, the Australian Medical Association and the Australian College of Nursing have said climate change is health emergency and that health impacts of climate change threaten to undermine the last centuries progress in public and global health.
- DEA believe that gas is also recognised as a health threat e.g. gas in domestic premises has been shown to contribute to childhood asthma.
- DEA believe that gas processing on the Burrup Peninsula will also increase existing levels of nitrogen dioxide, sulphur dioxide, ozone, mercury, other heavy metals and many thousands of tonnes of volatile organic compounds. Air pollutants of this type can cause serious health impacts, including heart disease, stroke, lung cancer, asthma and diabetes, even at low levels of exposure.
- On 25 February 2022, Woodside provided a response to DEA which included advice that Woodside has determined there is no potential for the functions, interests or activities of DEA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.
- Woodside advised that it will assess the self-identification by DEA and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared.
- Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 13 January 2022.
- Woodside invited DEA to provide further feedback on the proposed activity.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>DEA self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity.</p> <p>Themes from comments include:</p> <ul style="list-style-type: none"> <li>• Climate change and global impacts to human health</li> <li>• Pollutants produced by gas processing.</li> <li>• Whilst feedback has been received, there were no objections or claims.</li> </ul>	<p>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.</p> <p>Based on Woodside’s methodology for the Assessment of Additional Persons (see Section 5.3.1) Woodside has determined there is no potential for the functions, interests or activities of DEA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.</p> <p>Woodside confirms the SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program.</p> <p>The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect</p>	<p>No additional measures or controls are required.</p>

	<p>impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate.</p> <p>GHG emissions associated with the SITI activity (i.e., fuel combustion from project vessels) are considered in Section 6.7.5 of the publicly available SITI EP.</p> <p>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 <b>Section 7</b>).</p>	
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**Extinction Rebellion WA (XRWA)**

**Summary of information provided and record of consultation:**

- On 30 September 2022, Woodside emailed XRWA advising of the proposed activity (Appendix F, reference 2.10) and provided a Consultation Information Sheet. Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the XRWA public website that addressed the following topics relevant to the proposed activity, where appropriate:
  - Carbon and the impact on climate change:
    - Woodside confirmed that XRWA's concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to this EP. The SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate.
  - GHG emissions:
    - GHG emissions associated with the SITI activity (i.e. fuel combustion from project vessels) are considered in Section 6.6.5 of the publicly available SITI EP.
  - Marine life and trunkline installation activities:
    - Woodside confirms that impact assessments for receptors such as marine fauna are provided in Section 6.6 and Section 6.7 of the SITI EP. Impact assessment shows that potential consequence for marine fauna across the potential risks is maximum 'D' (Ref Figure 2-2 in the EP) which is a Minor short-term impact, with the most common consequences being Slight short-term or no lasting effect. Potential for any mortality in marine fauna as a result of the Petroleum Activities Program is unlikely, highly unlikely or remote.
  - Rock art and cultural heritage:
    - Woodside confirms emissions from the activities covered by the SITI EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program. Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any

heritage places, objects or values which will be impacted by the activities covered by the SITI EP. A summary of this work and its results are provided in Section 4.9.1 of the EP. No rock art will be displaced as a result of the proposed Petroleum Activities Program.

- Woodside extended an opportunity to meet to discuss the proposed activity.
- On 7 October 2022, Woodside sent a follow up email.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	Woodside has assessed claims and objections raised on the XRWA public website that cover topics relevant to the proposed activity, where appropriate and provided responses to XRWA (shown above).  Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see <b>Section 7</b> ).	No additional measures or controls are required.

**Friends of Australian Rock Art. Inc (FARA)**

**Summary of information provided and record of consultation:**

- On 14 January 2022 during the course of preparing the EP, FARA self-identified and emailed Woodside on the broader Scarborough development:
  - FARA believes it is a 'relevant organisation' due to being involved for many years in the preservation and conservation of the Murujuga rock art and surrounding landscape.
  - FARA raised concerns about the broader impacts of the Scarborough Project including climate change impacts and socio-economic pressures on remote and Indigenous communities in the Pilbara.
  - FARA raised concerns regarding damage to the cultural landscape and rock art and impacts on Traditional custodians of Murujuga and the Dampier Archipelago who will be directly impacted (emissions, facilities) and indirectly impacted (noise, view, dust).
  - FARA believes that increased industrial emissions on the Burrup Peninsula will almost certainly compromise the application to have the site added as a World Heritage place.
  - FARA believes its members (local workers in the gas industry and community members) will be affected by atmospheric emissions from offshore drilling, along associated pipelines, during processing, production, transport of the Scarborough gas, and gas used by Perdaman and others on the Burrup Peninsula.
  - FARA raised concerns regarding the marine environment and endangered species. FARA's members want to know:
    - that the Scarborough EPs have considered the impacts from all pollution sources on all potential receptors, and include stringent monitoring and pollution-response programs,

- that there is a robust decommissioning plan with funds set aside.
- On 25 February 2022, Woodside emailed FARA:
  - Woodside included advice that Woodside has determined there is no potential for the functions, interests or activities of FARA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.
  - Woodside advised that it will assess the self-identification by FARA and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared.
  - Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 13 January 2022.
  - Woodside invited FARA to provide further feedback on the proposed activity
- On 5 April 2022, FARA responded noting it had since consulted with NOPSEMA and understands Woodside's assessment of FARA's relevance.
  - FARA also commented that it understands it is appropriate for Woodside to consult with FARA for the Scarborough Operations EP.
- On 22 June 2022, FARA emailed Woodside:
  - FARA endorses and supports the request made by Murujuga custodians [REDACTED] and [REDACTED] that they are 'relevant persons' to be consulted by Woodside on the Scarborough gas project.
  - FARA stated it also has relevant person status as Murujuga's rock art will be indirectly impacted by the proposed development.
  - FARA claimed acidic emissions from Woodside's JV site at Karratha Gas Plant have been impacting on the fragile patina of the adjoining petroglyphs and emissions from Scarborough activities will further increase this impact. Using scrubber technology advocated by FARA has never been adopted by Woodside due to costs.
  - With the proposal to process additional gas for another 25 years using the aging infrastructure of the Karratha Gas Plant, FARA sees it as extremely urgent that Woodside's emissions-control technology, and that of the two Pluto plants, is updated to world standards in order to substantially reduce its toxic NOx and SOx emissions.
  - FARA wishes to be consulted by Woodside on all EPs pertaining to developments which would cause or lead to damage (both direct and indirect impacts) to Murujuga's rock art.
- On 22 July 2022, Woodside advised FARA that its previous advice provided on 25 February 2022 still applies.
  - Woodside confirmed it makes information on each of its EPs publicly available via its website. Woodside also confirmed it continues to accept feedback on the EPs which are made publicly available by the regulator upon initial submission and final acceptance and remain available online following final acceptance.
- On 18 July 2023, after raising it in the 5 July 2023 NOPSEMA correspondence, Woodside requested that NOPSEMA forward correspondence from FARA which had been provided to NOPSEMA on 25 March 2023. NOPSEMA forwarded it to Woodside on the same day.
- On 26 July 2023, Woodside responded to FARA acknowledging its comments and thanking it for its letter and research paper. Woodside advised it would assess the self-identification by FARA for the purposes of consultation with future Scarborough EPs.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
<p>FARA self-identified, provided comment on the broader Scarborough development.</p> <p>FARA's concerns include:</p> <ul style="list-style-type: none"> <li>• Murujuga rock art and surrounding landscape</li> <li>• Climate change</li> <li>• Socio-economic pressures on remote and Indigenous communities</li> <li>• Direct and indirect impacts on Traditional custodians of Murujuga and the Dampier Archipelago</li> <li>• Burrup Peninsula's World Heritage listing application</li> <li>• Impacts of emissions from Scarborough activities</li> <li>• Impacts to marine environment and endangered species</li> <li>• Impacts from all pollution sources on all potential receptors</li> <li>• Decommissioning.</li> </ul>	<p>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.</p> <p>Based on Woodside's methodology for the Assessment of Additional Persons (see Section 5.3.1) Woodside has determined there is no potential for the functions, interests or activities of FARA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.</p> <p>Woodside confirms the SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program.</p> <p>The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate.</p> <p>GHG emissions associated with the SITI activity (i.e., fuel combustion from project vessels) are considered in Section 6.7.5 of the publicly available SITI EP.</p> <p>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 <b>Section 7</b>).</p>	<p>Woodside has consulted FARA in the course of preparing this EP. Woodside has assessed the claims or objections raised by FARA. No additional measures or controls have been put in place.</p>
<b>International Fund for Animal Welfare (IFAW)</b>		
<p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>• On 30 September 2022, Woodside emailed IFAW advising of the proposed activity (Appendix F, reference 2.7) and provided a Consultation Information Sheet. <ul style="list-style-type: none"> <li>- Woodside extended an opportunity to meet to discuss the proposed activity.</li> </ul> </li> <li>• On 7 October 2022, Woodside sent a follow up email.</li> </ul>		

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Lock The Gate Alliance (LTGA)</b>		
<p><b>Summary of information provided and record of consultation:</b></p> <ul style="list-style-type: none"> <li>On 4 February 2022 during the course of preparing the EP, LTGA self-identified and provided comment on the broader Scarborough development and requested to be consulted on the proposed activity: <ul style="list-style-type: none"> <li>LTGA believes it is a relevant organisation which will be affected by the Scarborough development. Its members, especially those who live in the Pilbara and Kimberley, those who depend on groundwater, and those who live in areas subject to flooding (especially the Kimberley), will be affected by climate change which will be increased by the project.</li> <li>LTGA commented that the development will produce carbon emissions over the next 25 years, impacting climate change and socioeconomic pressures which will directly affect LTGA and its supporters.</li> <li>LTGA believe that the Scarborough development will lead to damage to the National Heritage values of the Burrup Peninsula.</li> </ul> </li> <li>On 25 February 2022 Woodside provided a response to LTGA which included advice that Woodside has determined there is no potential for the functions, interests or activities of LTGA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan. <ul style="list-style-type: none"> <li>Woodside advised it will assess the self-identification by LTGA and the comments received to determine relevancy for the purposes of consultation for future Scarborough EPs when those EPs are being prepared.</li> <li>Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 31 August 2021.</li> <li>Woodside invited LTGA to provide further feedback on the proposed activity.</li> </ul> </li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
LTGA self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity. Themes from comments include:	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. Based on Woodside's methodology for the Assessment of Additional Persons (see Section 5.3.1) Woodside has	No additional measures or controls are required.

<ul style="list-style-type: none"> <li>• Socio-economic impacts of climate change and carbon emissions on its members</li> <li>• Damage to National Heritage values of the Burrup Peninsula.</li> </ul> <p>Whilst feedback has been received, there were no objections or claims.</p>	<p>determined there is no potential for the functions, interests or activities of LTGA to be affected by the activities to be carried out under the Environment Plan, or the revision of the Plan.</p> <p>Woodside confirms the SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program.</p> <p>The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate.</p> <p>GHG emissions associated with the SITI activity (i.e., fuel combustion from project vessels) are considered in Section 6.7.5 of the publicly available SITI EP.</p> <p>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 <b>Section 7</b>).</p>	
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**Market Forces**

**Summary of information provided and record of consultation:**

- On 30 September 2022, Woodside emailed Market Forces advising of the proposed activity (Appendix F, reference 2.9) and provided a Consultation Information Sheet. Woodside also provided specific information relevant to the proposed activity based on the claims and objections raised on the Market Forces public website that addressed the following topics relevant to the proposed activity, where appropriate:
  - Assessment of climate change from activity:
  - Woodside confirmed that the SITI EP assesses both direct and indirect impacts and risks associated with the proposed Petroleum Activities Program, having regard to the nature and scale of the proposed Petroleum Activities Program. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect

impacts/risks of the Petroleum Activities Program for the SITI EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the SITI activity (ie fuel combustion from project vessels) are considered in Section 6.7.5 of the EP.

- Rock art and cultural heritage:
- Emissions from the activities covered by the EP are of a scale and physical remoteness from Murujuga’s rock art that no credible impact pathway is foreseen. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program.
- Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI EP. A summary of this work and its results are provided in Section 4.9.1 of the EP.
- No rock art will be displaced as a result of the proposed Petroleum Activities Program.
- Assessment on marine diesel spill risk:
- Unplanned Activities (Accidents, Incidents, Emergency Situations) from the Trunkline installation and associated activities are assessed in Section 6.7 of the EP. Section 4 of the EP describes the EMBA which 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 marine diesel spill.
- Ecological impact thresholds used to delineate the EMBA are defined in Section 6.7.1. The worst-case credible spill scenario for this EP is a vessel collision resulting in hydrocarbon release of 2,000 m3 of marine diesel. The EMBA and the size of the worst-case credible spill scenario align with the Scarborough OPP. The EMBA presented does not represent the predicted coverage of any one marine diesel 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.
- 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 a marine diesel release, to minimise loss of hydrocarbons to the environment.
- In the unlikely event of a marine diesel release, 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.
- Woodside extended an opportunity to meet to discuss the proposed activity.
- On 7 October 2022, Woodside sent a follow up email.

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
No feedback, objections or claims received despite follow up.	Woodside has assessed claims and objections raised on the Market Forces public website that cover topics relevant to the proposed activity, where appropriate and provided responses to Market Forces (shown above).	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 <b>Section 7</b> ).	
<b>World Wildlife Fund (WWF) Australia</b>		
<b>Summary of information provided and record of consultation:</b>		
<ul style="list-style-type: none"> <li>On 30 September 2022, Woodside emailed WWF advising of the proposed activity (Appendix F, reference 2.6) and provided a Consultation Information Sheet. Woodside extended an opportunity to meet to discuss the proposed activity.</li> <li>On 7 October 2022, Woodside sent a follow up email.</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.
<b>Research institutes and local conservation groups or organisations</b>		
<b>Western Australian Marine Science Institution (WAMSI)</b>		
<b>Summary of information provided and record of consultation:</b>		
<ul style="list-style-type: none"> <li>On 3 February 2023, Woodside emailed WAMSI advising of the proposed activity (Appendix F, reference 4.39) and provided an updated Consultation Information Sheet. <ul style="list-style-type: none"> <li>Woodside also asked for details of any research activities WAMSI is undertaking that may overlap with the proposed activity.</li> </ul> </li> <li>On 22 February 2023, Woodside sent a follow up email (Appendix F, reference 5.3).</li> </ul>		
<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.

**Commonwealth Scientific and Industrial Research Organisation (CSIRO)**

**Summary of information provided and record of consultation:**

- On 11 November 2022, Woodside emailed CSIRO advising of the proposed activity (Appendix F, reference 2.17).
  - Woodside provided a link to the Consultation Information Sheet and asked for advice regarding any research activities CSIRO may be undertaking that may overlap with Woodside’s proposed activities.
- On 6 February 2023, Woodside emailed CSIRO advising of the proposed activity (Appendix F, reference 4.41) 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 (Appendix F, reference 5.10).

<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
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 <b>Section 7</b> ).	No additional measures or controls are required.

**Australian Institute of Marine Science (AIMS)**

**Summary of information provided and record of consultation:**

- On 11 November 2022, Woodside emailed AIMS advising of the proposed activity (Appendix F, reference 2.15).
  - Woodside provided a link to the Consultation Information Sheet and asked for advice regarding any research activities AIMS may be undertaking that may overlap with Woodside’s proposed activities.
- On 6 February 2023, Woodside emailed AIMS advising of the proposed activity (Appendix F, reference 2.18) 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.


<b>Summary of Feedback, Objection or Claim</b>	<b>Woodside Energy’s Assessment of Merits of Feedback, Objection or Claim and its Response</b>	<b>Environment Plan Controls</b>
AIMS has responded and confirmed there are no overlaps with planned AIMS science activities in the area.	AIMS has confirmed there are no overlaps with planned AIMS science activities in the area.	No additional measures or controls are required.

<p>Whilst feedback has been received, there were no objections or claims.</p>	<p>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 <b>Section 7</b>).</p>	
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APPENDIX F

1 CONSULTATION (2021)

1.1 Woodside Consultation Information Sheet (sent to all relevant stakeholders) (August 2021)



STAKEHOLDER CONSULTATION

# INFORMATION SHEET

August 2021

## SCARBOROUGH SEABED INTERVENTION AND TRUNKLINE INSTALLATION

### CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and Trunkline installation activities in Commonwealth waters for the proposed Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

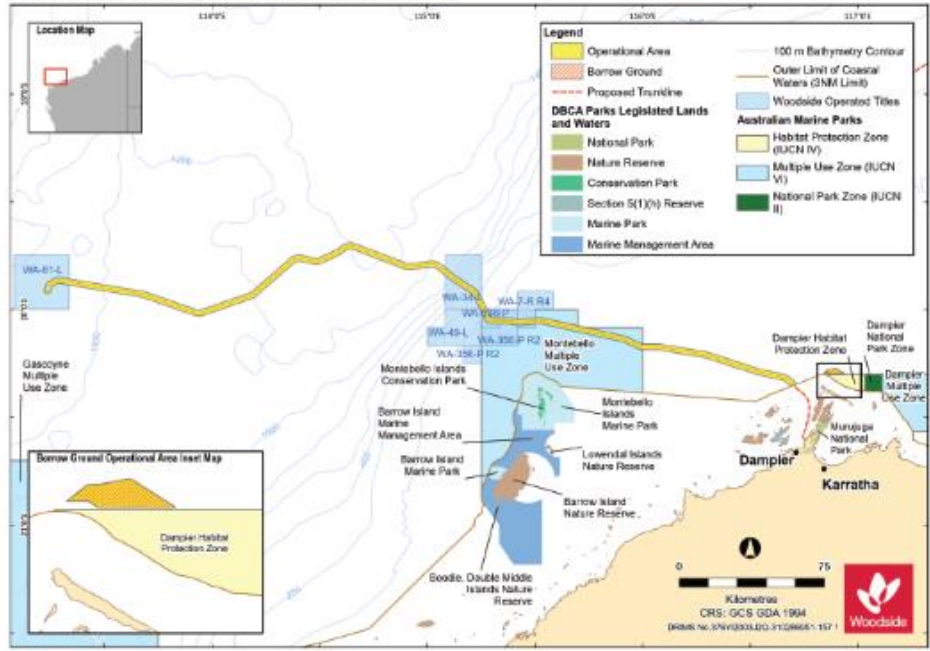
The activity involves installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. The scope of this EP covers seabed intervention and installation activities for the section of the Trunkline in Commonwealth waters from the State waters boundary to the Pipeline End Termination (PLET) in WA-61-L. A separate EP is planned to address seabed intervention and Trunkline installation

activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety.

Subject to relevant approvals and other constraints such as vessel availability and weather, seabed intervention activities are expected to start in late 2022. Trunkline installation activities in Commonwealth waters are expected to commence in late 2023 following successful completion of the State waters installation scope. The Petroleum Activities Program is expected to take around 24 months to execute with activities occurring in multiple campaigns.

Woodside is operator of the Scarborough field (WA-61-L) with a 73.5% interest. BHP Petroleum (North West Shelf) Pty Ltd holds the remaining 26.5% share in the title.

Figure 1. Proposed Scarborough Seabed Intervention and Trunkline Installation Operational Area



Scarborough Seabed Intervention and Trunkline Installation - Carnarvon Basin, North-West Australia

**Proposed Activity**

Table 1 – Activity summary and project vessels

Item	Description
<b>Location</b>	<ul style="list-style-type: none"> <li>• Carnarvon Basin, North-West Australia</li> </ul>
<b>Water depth</b>	<ul style="list-style-type: none"> <li>• Approximately 32 m (Trunkline route at State waters boundary) to 1400 m (deepest point approximately 275 km along the Trunkline route)</li> </ul>
<b>Earliest commencement date</b>	<ul style="list-style-type: none"> <li>• Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints</li> <li>• Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.</li> </ul>
<b>Estimated duration</b>	<ul style="list-style-type: none"> <li>• Approximately 24 months across multiple campaigns</li> </ul>
<b>Distance from Operational Area to nearest port/marinas</b>	<ul style="list-style-type: none"> <li>• Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits</li> </ul>
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park - Multiple Use Zone (Cwith), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Seabed Intervention</b>	
<b>Key Vessels</b>	<ul style="list-style-type: none"> <li>• Trailing suction hopper dredge (TSHD)</li> <li>• Offshore construction vessel (OCV)</li> <li>• Fall pipe vessel (rock dump)</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul>
<b>Key Activities</b>	<ul style="list-style-type: none"> <li>• Surveys:                             <ul style="list-style-type: none"> <li>» Geophysical (including hydrographic surveys)</li> <li>» Geotechnical</li> <li>» Prelay survey before pipelay (visual and multibeam echo sounder)</li> </ul> </li> <li>• Trenching along the Trunkline route and material disposal at existing Spoil Ground 5A</li> <li>• Borrow ground dredging and backfill along the trunkline</li> <li>• Continental slope crossing seabed preparation</li> <li>• Trunkline and infrastructure crossing supports installation, using rock and mattresses</li> <li>• Trunkline pre and post lay span rectification</li> <li>• Contingent seabed intervention activities including maintenance, dredging/excavation of resettled material in the trench prior to pipelay, post lay dredging, grout bags and rock dumping</li> </ul>
<b>Trunkline Installation</b>	
<b>Key Vessels</b>	<ul style="list-style-type: none"> <li>• Primary Installation Vessel (PIV) multi-joint operation</li> <li>• Shallow Water Lay Barge (SWLB)</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel (OCV)</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>
<b>Key activities</b>	<ul style="list-style-type: none"> <li>• Surveys:                             <ul style="list-style-type: none"> <li>» Pre-lay survey of the trunkline route prior to commencement of pipelay (visual and multibeam echo sounder)</li> <li>» Post-lay as-built survey of the completed trunkline (visual and multibeam echo sounder)</li> </ul> </li> <li>• Installation of the Trunkline by a SWLB in the shallow water section of the route where the DP pipelay vessel may not be able to access due to water depth restrictions</li> <li>• Setting of SWLB anchors with anchor handling vessel/tug</li> <li>• Installation of the Trunkline by the PIV</li> <li>• Installation of PLET and ancillary structures as required through design by the PIV</li> <li>• Continuous delivery of pipe to the SWLB and PIV by pipe supply vessels</li> <li>• Installation of the foundations for the PLET structure by a construction vessel prior to the installation of the PLET</li> <li>• Dry pre-commissioning of the trunkline by a construction vessel</li> <li>• Contingent activities including wet commissioning, wet buckle recovery and Flood, Clean, Gauge, Testing</li> </ul>

**Proposed Locations**

The Operational Area includes the following Project Areas:

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels (includes Spoil Ground 5A which is included in the Trunkline operational area).
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced to assist with Trunkline stabilisation).

Within Commonwealth waters, the Scarborough Trunkline will extend from the FPU towards the existing Pluto offshore platform and infrastructure, approximately 200 km offshore north-west of the Burrup. The Scarborough Trunkline will then deviate to the south to avoid the existing facilities and minimise environmental, technical and safety risks. From approximately 20 km south-east of the Pluto platform, the Trunkline will be routed alongside the Pluto Trunkline until it reaches Mermaid Sound.

Sand may be required to assist with stabilisation along a -20 km section of the Scarborough Trunkline from the State waters boundary. This sand is proposed to be obtained from the Offshore Borrow Ground Project Area in Commonwealth waters, as shown in Figure 1. The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Communications with Mariners**

Safety exclusion zones will apply around the seabed intervention and the Trunkline installation vessels. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

**Implications for Stakeholders**

Woodside will consult relevant stakeholders whose interests, functions, and activities may be affected by the proposed activities. We will also keep informed other stakeholders who have an identified interest in the planned activities. Woodside has undertaken an assessment to identify potential risks to the marine environment and relevant stakeholders, considering timing, duration, location and potential impacts arising from the construction and installation activities. This EP approval falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and the activities will be conducted in line with relevant requirements of the OPP. A number of mitigation and management measures will be implemented and are summarised in Table 2. These measures will continue to be developed in conjunction with the EP, including impact assessments and controls to reduce impacts to an ALARP and acceptable level. Further details will be provided in the EP.

**About Scarborough**

The Scarborough gas resource is located offshore, approximately 375 km west-northwest of the Burrup Peninsula and is part of the Greater Scarborough gas fields which are estimated to hold 13.0 Tcf (2C, 100%) of dry gas.

Woodside, as operator of the Scarborough Joint Venture, is proposing to develop the Scarborough gas resource through new offshore facilities connected by an approximately 430 km pipeline to a proposed expansion of the existing Pluto LNG onshore facility (Pluto Train 2).

For more information about the proposed Scarborough development, visit [woodside.com.au](http://woodside.com.au).

Table 2 - Summary of key risks and/or impacts and management measures.

Potential Risk and/or Impact	Mitigation and/or Management Measure
<b>Planned activities</b>	
<b>Interests of relevant stakeholders with respect to:</b>	<ul style="list-style-type: none"> <li>• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.</li> <li>• Advice to relevant stakeholders prior to the commencement of activities.</li> <li>• All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.</li> </ul>
• Defence activities	
• Petroleum activities	
• Commercial fishing activities	
• Shipping activities	
<b>Marine fauna interactions</b>	<ul style="list-style-type: none"> <li>• Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.</li> <li>• The dredging vessel will have trained crew as marine fauna observers and adhere to the observation and exclusion zones for marine fauna.</li> </ul>
<b>Marine discharges</b>	<ul style="list-style-type: none"> <li>• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable.</li> </ul>
<b>Seabed disturbance</b>	<ul style="list-style-type: none"> <li>• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> <li>• Bathymetric and other surveys will be undertaken to monitor seabed characteristics before and after activities.</li> <li>• A management framework for dredging and backfill activities based on water quality will be developed.</li> <li>• Dredging and spoil disposal activities will be undertaken in compliance with a sea dumping permit.</li> <li>• A minimum 250 m buffer from the Dampier Marine Park boundaries will be in place for the borrow ground dredging activities.</li> </ul>
<b>Vessel interaction</b>	<ul style="list-style-type: none"> <li>• Woodside will notify relevant fishery stakeholders and government maritime safety agencies of specific start and end dates, specific vessel-on-location dates and any exclusion zones prior to commencement of the activity.</li> </ul>



Potential Risk and/or Impact	Mitigation and/or Management Measure
<b>Waste management</b>	<ul style="list-style-type: none"> <li>Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan.</li> <li>Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.</li> <li>Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.</li> </ul>
<b>Unplanned activities</b>	
<b>Hydrocarbon release</b>	<ul style="list-style-type: none"> <li>Appropriate spill response plans, equipment and materials will be in place and maintained.</li> <li>Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.</li> </ul>
<b>Introduction of Invasive marine species</b>	<ul style="list-style-type: none"> <li>All vessels will be assessed and managed as appropriate to prevent the introduction of Invasive marine species.</li> <li>Compliance with Australian biosecurity requirements and guidance.</li> <li>Contracted vessels comply with Australian ballast water requirements.</li> </ul>

**Providing Feedback**

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. If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before 30 September 2021.

Please note that your feedback and our response will be included in our Environment Plan for the proposed activity, 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 for this information to remain confidential to NOPSEMA.

Woodside Energy Ltd  
 E: Feedback@woodside.com.au | Toll free: 1800 442 977

*Please note that stakeholder feedback will be communicated to NOPSEMA as required under legislation. Woodside will communicate any material changes to the proposed activity to affected stakeholders as they arise.*

[www.woodside.com.au](http://www.woodside.com.au)



**1.2 Email sent to Australian Border Force (ABF), 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), Marine Tourism WA, Recfishwest – 31 August 2021**

Dear stakeholder

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. It is also available on our [website](#).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

**Activity:**

**Summary:**

Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

**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 block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.

**Approx. Water Depth (m):**

~ 32 m – 1400 m

**Earliest commencement date:**

Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints



Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

**Estimated duration:**

Approximately 24 months across multiple campaigns

**Distance from Operational Area to nearest port/marina**

Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering 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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards

██████████  
██

### 1.2.1 Oil Pollution First Strike Plan emailed to DOT (5 November 2021)

Dear ██████████

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 Scarborough Subsea Intervention and Trunkline Installation Environment Plan to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the proposed Scarborough development and would like to offer DoT the opportunity to provide feedback on the First Strike Plan.

Information is presented as follows:

A Consultation Information Sheet providing information on the proposed activities is available on Woodside's website [here](#).

The Scarborough Subsea Intervention and Trunkline Installation 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).

A summary of activity-specific information in response to DoT's consultation expectations, as per its Offshore Petroleum Industry Guidance Note (July 2020), is included in the table below.

Woodside propose to submit an EP in December 2021. Should you require additional information or have a comment to make about the First Strike Plan, please contact me by close of business 6 December to allow us sufficient time to inform our activity planning and EP development.

Feedback can be submitted via email or letter to: [feedback@woodside.com.au](mailto:feedback@woodside.com.au) or by phone at ██████████

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.

We look forward to hearing from you.

Many thanks,

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 marine diesel spill.		
Description of existing environment and protection priorities.	Included in section 4 of the First Strike Plan		
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 2017).	<p>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. Three unplanned events or credible spill scenarios for the Petroleum Activities Program have been selected as representative across types, sources and incident/response levels, up to and including the WCCS.</p> <p>Table 2-1 of the OSPRMA presents the credible scenarios for the Petroleum Activities Program. One worst-case credible scenario (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.</p> <p>Response performance outcomes have been defined based on a response to the WCCS.</p>		
Outcomes of oil spill trajectory modelling, including predicted	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"><b>Credible Scenario-01: a short-term (instantaneous) surface release of 2,000 m<sup>3</sup> of marine diesel from a</b></td> </tr> </table>		<b>Credible Scenario-01: a short-term (instantaneous) surface release of 2,000 m<sup>3</sup> of marine diesel from a</b>
	<b>Credible Scenario-01: a short-term (instantaneous) surface release of 2,000 m<sup>3</sup> of marine diesel from a</b>		

<p>times to enter State waters and contact shorelines.</p>	<p>Dampier Archipelago</p>	<p>vessel collision outside Mermaid Sound – residue of 100 m<sup>3</sup> (5%) Minimum time to shoreline contact (above 100 g/m<sup>2</sup>) in days 53 hours (2.2 days) – 3 m<sup>3</sup></p>
<p>Details on initial response actions and key activation timeframes.</p>	<p>Included in Section 2 and 3 of the First Strike Plan</p>	
<p>Potential Incident Control Centre arrangements.</p>	<p>Included in Appendix E and F of the First Strike Plan</p>	
<p>Potential staging areas / Forward Operating Base.</p>	<p>A Forward Operating Base can be established at Exmouth and/ or Dampier.</p>	
<p>Details on response strategies.</p>	<p>Included in Section 2 and 3 of the First Strike Plan</p>	
<p>Use of DoT equipment resources</p>	<p>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.</p>	
<p>Details and diagrams on proposed IMT structure including integration of DoT arrangements as per this IGN.</p>	<p>Included in Appendix E and F of the First Strike Plan</p>	
<p>Details on testing of arrangements of OPEP/OSCP.</p>	<ul style="list-style-type: none"> <li>• Level 1 Response – one Level 1 ‘First Strike’ drill conducted within two weeks of commencing activity and then at least every 6 month hire period thereafter.</li> <li>• Level 2 Response – a minimum of one Emergency Management exercise conducted within one month of commencing activity and then at least every 6 month hire period thereafter.</li> <li>• 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.</li> </ul> <p><b>Testing of Oil Spill Response Arrangements</b> 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 each of these arrangements is adequately tested, the Hydrocarbon Spill Preparedness Capability and Competency Coordinator ensures tests are conducted in alignment with the Hydrocarbon Spill Arrangements Testing Schedule. Woodside’s Hydrocarbon Spill Preparedness &amp; Response Testing Schedule aligns with international good practice for spill preparedness &amp; response management; the testing is compatible with the IPIECA Good Practice Guide and the Australian Emergency Management Institute Handbook.</p>	

	<p>The Hydrocarbon Spill Arrangements Testing Schedule (Woodside Doc No. 10058092) identifies the type of test which will be conducted annually for each arrangement, and how this type will vary over a five year rolling schedule. Testing methods may include (but are not limited to): audits, drills, field exercises, functional workshops, assurance reporting, assurance monitoring and reviews of key external dependencies.</p> <p>Activity specific Oil Spill Pollution First Strike Plans are developed to meet the response needs of that particular activity's Worst Credible Spill Scenario (WCCS). The ability to implement these plans may rely on specific arrangements or those common to other Woodside activities. Regardless of their commonality each arrangement will be tested in at least one of the methods annually. This ensures that personnel are familiar with spill response procedures, reporting requirements, and roles/responsibilities.</p> <p>At the completion of testing a report is produced to demonstrate the outcomes achieved against the tested objectives. The report will include the lessons learned, any improvement actions and a list of the participants. Alternatively, an assurance report, assurance records, or audit report may be produced. These reports record findings and include any recommendations for improvement. Improvement actions and their close-out are actively recorded and managed.</p> <p>This is over and above the emergency management exercises conducted.</p>
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.

**1.3 Email sent to Director of National Parks (DNP) (31 August 2021)**

Dear Director of National Parks,

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

This 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. Woodside is proposing four Commonwealth EPs for

the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

**Table 1 – Key project risks relevant to Commonwealth Marine Parks**

Activity	Impact / Risk	Marine Park	Controls*
Planned:			
Borrow Ground Dredging	Turbidity, Seabed disturbance	Adjacent to Dampier Marine Park	<ul style="list-style-type: none"> <li>• A 250 m buffer zone will be implemented between the offshore borrow ground and the Dampier AMP</li> <li>• Compliance with sea dumping permit SD2019-3982</li> <li>• Tiered monitoring and management framework for dredging and backfill activities based on water quality. *Note telemetered water quality monitoring site on marine park boundary.</li> <li>• EPBC Regulations 2000 Part 8 Division 8.1 Interacting with Cetaceans</li> <li>• During daylight hours, trained vessel crew onboard the dredge will visually assess marine fauna and observation and exclusion zones will be adhered to for dredging and backfill operations</li> <li>• Turtle deflection chains installed on the TSHD drag head.</li> </ul>
Trunkline installation & infrastructure crossings	Seabed disturbance / footprint	Montebello Marine Park	<ul style="list-style-type: none"> <li>• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> </ul>
Vessel presence	Lighting & underwater noise	Montebello & Dampier Marine Parks	<ul style="list-style-type: none"> <li>• Lighting will be limited the minimum required for navigational and safety requirements, except for emergency events.</li> </ul>

			<ul style="list-style-type: none"> <li>• EPBC Regulations 2000 Part 8 Division 8.1 Interacting with cetaceans.</li> </ul>
Unplanned:			
Vessel presence	Invasive Marine Species (IMS)	Montebello & Dampier Marine Parks	<ul style="list-style-type: none"> <li>• Compliance with the Woodside Invasive Marine Species Management Plan.</li> <li>• Requirements of the Australian Ballast Water Management guidelines to be met.</li> </ul>
Vessel collision	Hydrocarbon release	All parks within EMBA	<ul style="list-style-type: none"> <li>• All vessels and facilities (appropriate to class) will comply with MARPOL 73/78, the Navigation Act 2012, the Protection of the Sea (Prevention of Pollution from Ships Act 1983 and subsequent Marine Orders</li> <li>• Relevant Stakeholders will be notified of activities prior to commencement</li> <li>• Vessels will have in place a valid and appropriate Shipboard Oil Pollution Emergency Plan and/or Shipboard Marine Pollution Emergency Plan. Emergency response activities will be implemented in accordance with the SOPEP/SMPEP</li> <li>• Environment Plans and Oil Pollution Emergency Plans will be accepted and in place, appropriate to the credible hydrocarbon spill scenario associated with activities during the development of Scarborough.</li> <li>• Emergency response activities will be implemented in accordance with the OPEP</li> <li>• Emergency response capability will be maintained in accordance with EP, OPEP and related documentation.</li> </ul>

\*Further controls commensurate with residual risk level to be proposed during EP development.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

### **Implications for Parks Australia interests**

Parks Australia (Director of National Parks) were identified as a key stakeholder for consultation during initial development of the Seabed Intervention EP in 2020. Parks Australia were previously engaged by Woodside and presented with information on activities that may impact marine parks, particularly the Montebello and Dampier Marine Parks, as well as studies carried out by Woodside to inform impact assessments and the OPP. In mid-2020 when the Scarborough project was put on hold for a period, development of the EP and subsequent consultation also paused.

With recommencement of the Seabed Intervention and Trunkline Installation EP development recently, some changes to highlight include:

- EP scope now includes Trunkline installation, as well as seabed intervention.
- Woodside will adopt the NOPSEMA Oil Spill Modelling Bulletin exposure values for dissolved and entrained hydrocarbons when analysing oil spill modelling outcomes. This means the previous Environment that May be Affected (EMBA) presented in the OPP will change slightly.
- Revised modelling has been carried out for borrow ground dredging activities due to progression in project definition and input data. This modelling aids in the assessment of suspended sediment impact potential on benthic and other communities, and will be presented in detail in the EP.

These changes, along with the environmental risk factors described in **Table 1** below, will be discussed in more depth during a virtual consultation meeting with Parks Australia representatives - currently scheduled for 13 September 2021.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#).

More information on the Scarborough development can be found [here](#).

### **Feedback:**

In line with Australian Government guidance on consultation with government agencies, can you please advise within 10 business days if you have any feedback on the proposed activity, noting that your feedback and our response will be included in an Environment Plan for consideration by the National Offshore Petroleum Safety and Environmental Management Authority, as is required under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

We would also be happy to meet online should you wish to discuss the proposed activity in more detail.

Regards




#### 1.4 Email sent to Australian Maritime Safety Authority (AMSA) – Marine Safety and Australian Hydrographic Office (AHO) (31 August 2021)

Dear AMSA / AHO

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#). A shipping channel map is also attached.

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

#### **Activity:**

**Summary:**

Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

**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 block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.

**Approx. Water Depth (m):**

~ 32 m – 1400 m

**Earliest commencement date:**

Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints

Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

- Estimated duration:** Approximately 24 months across multiple campaigns
- Distance from Operational Area to nearest port/marina** Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
- Distance from Operational Area to nearest marine park**
- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
  - Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.
- Operational Areas**
- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
  - **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.
- Vessels:**
- Trailing suction hopper dredge (TSHD)
  - Offshore construction vessel (OCV)
  - Fall pipe vessel (rock dump)
  - Primary Installation Vessel (PIV) multi-joint operation
  - Shallow Water Lay Barge (SWLB)
  - Anchor handling vessel/tug
  - Pipe supply vessels
  - Survey vessels
  - Support vessels
  - Fuel bunkering 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](mailto: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).

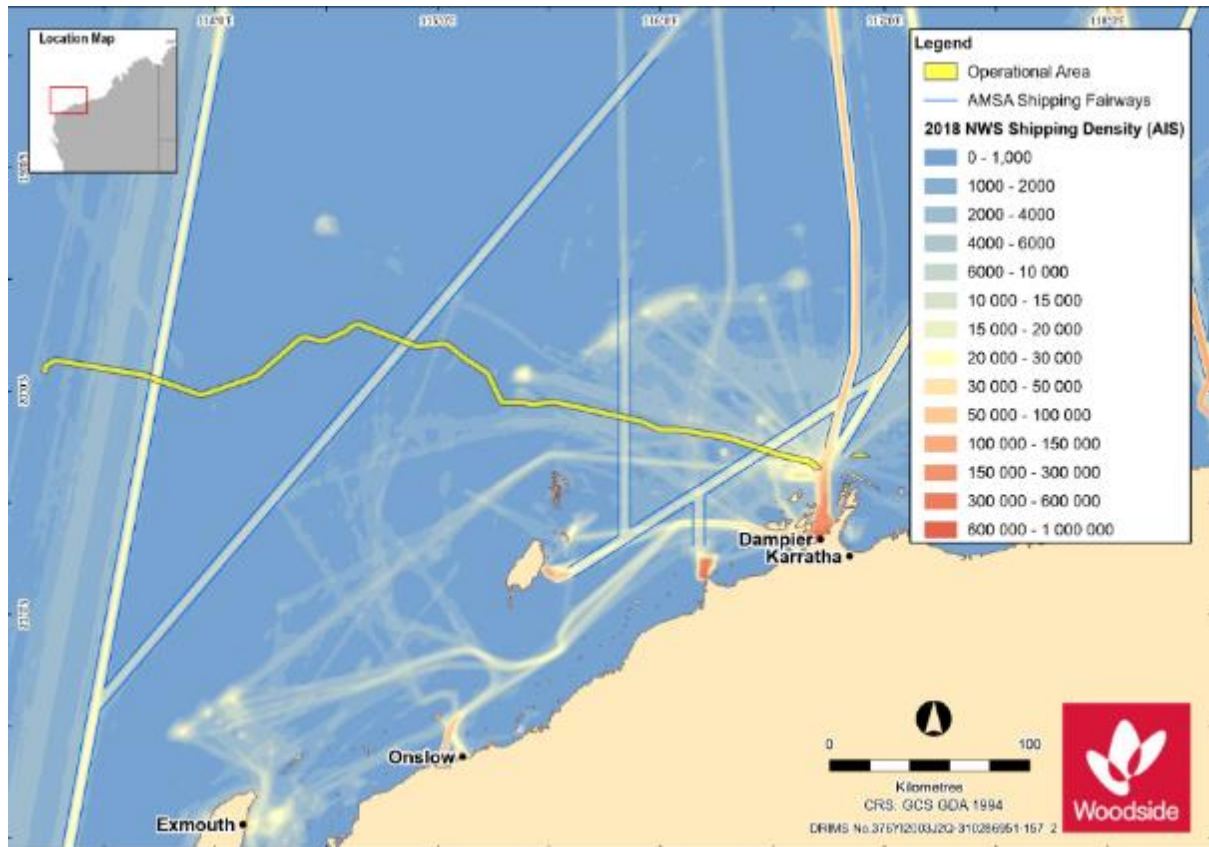
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 30 September 2021.

Regards

██████  
████████████████████

**1.4.1 Shipping lanes map sent to AMSA and AHO (31 August 2021)**



**1.4.2 Oil Pollution First Strike Plan emailed to AMSA (5 November 2021)**

Dear ██████

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 Scarborough Subsea Intervention and Trunkline Installation Environment Plan to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the proposed Scarborough development and would like to offer AMSA the opportunity to provide feedback on the First Strike Plan.

Information is presented as follows:

- A Consultation Information Sheet providing information on the proposed activities is available on Woodside’s website [here](#).

- The *Scarborough Subsea Infrastructure and Trunkline Installation 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 propose to submit an EP in December 2021. Should you require additional information or have a comment to make about the First Strike Plan, please contact me by close of business 6 December to allow us sufficient time to inform our activity planning and EP development.

Feedback can be submitted via email or letter to: [feedback@woodside.com.au](mailto:feedback@woodside.com.au) or by phone at [REDACTED]

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.

We look forward to hearing from you.

Many thanks,  
[REDACTED]  
[REDACTED]

### **1.5 Email sent to Department of Climate Change, Energy, the Environment and Water Agriculture (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries (formerly DAWE) (31 August 2021)**

Dear DAWE

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#). A map of relevant fisheries is also attached.

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

**Implications for DAWE’s interests:**

We have identified and assessed potential risks and impacts to active Commonwealth commercial fishers, biosecurity matters and the marine environment that overlap the proposed Operational Area in the development of the proposed Environment Plan for this activity.

Woodside has endeavoured to reduce these risks to an as low as reasonably practicable (ALARP) level.

**Commercial fishing implications:**

Based on recent advice from the Australian Fishing Management Authority, Woodside will consult with licence holders in the following fisheries (on the basis of fishing licence overlap with the Operational Area) and will provide a fact sheet containing information relevant to commercial fishing interests:

- North-West Slope Trawl Fishery
- Western Deepwater Trawl Fishery
- Western Skipjack Fishery
- Southern Bluefin Tuna Fishery
- Western Tuna and Billfish Fishery

**Biosecurity implications:**

With respect to the biosecurity matters, please note the following information below.

<b>Potential IMS risk</b>	<b>IMS mitigation management</b>
Introduction and establishment of IMS.	Vessels are required to comply with the Australian Biosecurity Act 2015, specifically the Australian Ballast Water Management Requirements (as defined under the Biosecurity Act 2015) (aligned with the International Convention for the Control and Management of Ships’ Ballast Water and Sediments) to prevent introducing IMS. Vessels will be assessed and managed to prevent the introduction of invasive marine species in accordance with Woodside’s Invasive Marine Species Management Plan. Woodside’s Invasive Marine Species Management Plan includes a risk assessment process that is applied to vessels undertaking Activities. Based on



the outcomes of each IMS risk assessment, Management measures commensurate with the risk (such as the treatment of internal systems, IMS inspections or cleaning) will be implemented to minimise the likelihood of IMS being introduced.

**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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards

[Redacted signature]

**1.6 Email sent to Department of Defence (DoD) (31 August 2021)**

Dear Department of Defence,

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#). A map of practice and training defence areas is also attached.

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry

Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

**Activity:**

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<b>Operational Areas</b>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.</li></ul>

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering 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](mailto: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 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.

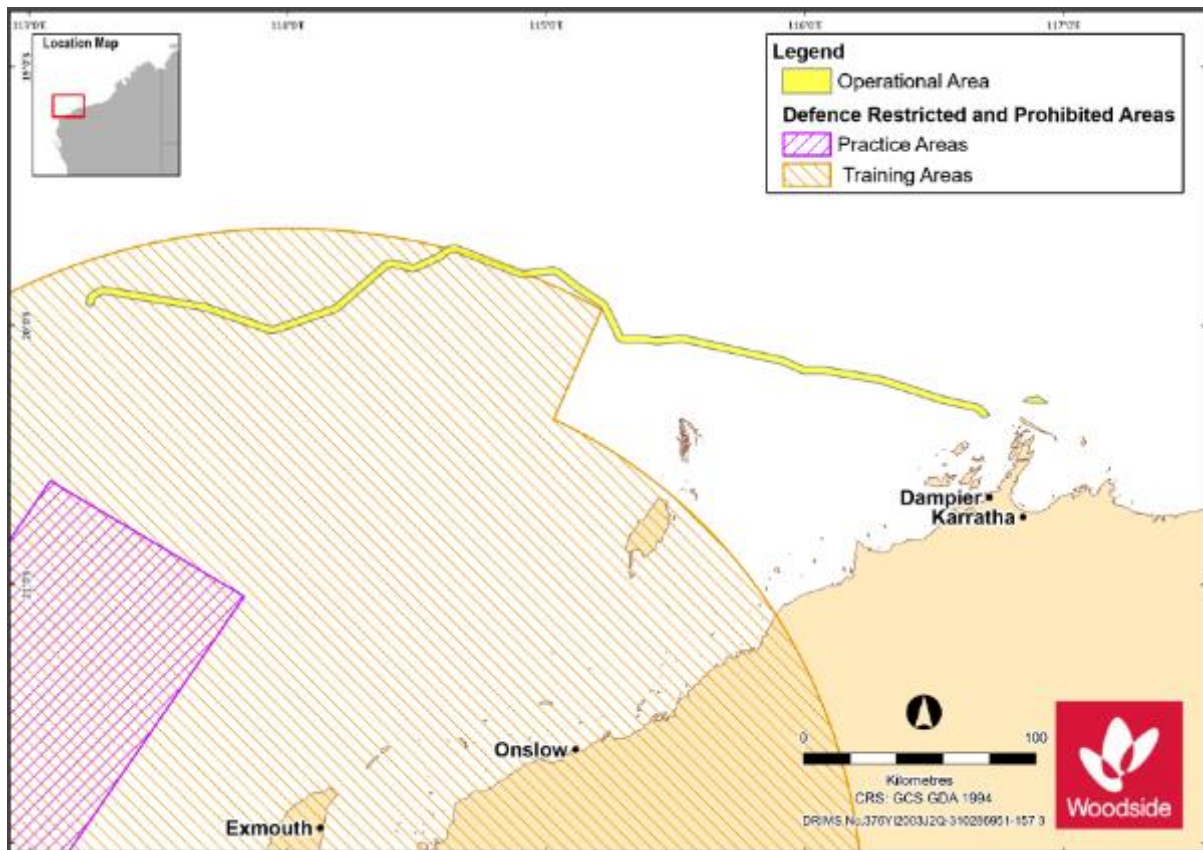
Please provide your views by 30 September 2021.

Regards

[Redacted signature block]



### 1.6.1 Defence areas map sent to Department of Defence (DoD) (31 August 2021)



### 1.7 Email sent to WAFIC (31 August 2021)

Dear [REDACTED]

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

We have identified potential impacts to commercial fishers and the environment and are currently working to reduce these risks to as low as reasonably practicable as we develop the EP. 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. We also note AFMA's recent advice and will consult with all Commonwealth fishery licences that overlap the Operational Area.

An information sheet (also on our [website](#)) and map of relevant fisheries are attached.

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

**Activity:**

<i>Summary:</i>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<i>Location:</i>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<i>Approx. Water Depth (m):</i>	~ 32 m – 1400 m
<i>Earliest commencement date:</i>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<i>Estimated duration:</i>	Approximately 24 months across multiple campaigns.
<i>Distance from Operational Area to nearest port/marina</i>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<i>Distance from Operational Area to nearest marine park</i>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<i>Operational Areas</i>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east</li></ul>

of the proposed Trunkline route and adjacent to the Dampier Marine Park.

*Relevant Fisheries*

**Commonwealth:** North-West Slope Trawl Fishery

**State:** Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, Marine Aquarium Fishery and Specimen Shell Fishery

**Note:** We note previous WAFIC advice that the Marine Aquarium Fishery and Specimen Shell Fishery are dive and wade fisheries at shallow water depth. We have taken a 'cautionary' approach given the water depth of the proposed activity (~ 32 m) and catch and effort data.

*Additional Fisheries*

(\*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area)

**Commonwealth:** Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery

*Exclusionary/Cautionary Zone:*

Temporary safety exclusion zones will be confirmed prior to the activity commencing and will be issued with notifications to mariners at the time of the activity. The temporary exclusion zones will likely range between 500 – 1500 m depending on the vessel type and activity being carried out.

*Vessels:*

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Potential risks to commercial fishing and proposed mitigation measures:**

Potential Risk and/or Impact	Mitigation and/or Management Measure
<b>Planned activities</b>	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> <li>• Defence activities</li> <li>• Petroleum activities</li> <li>• Commercial fishing activities</li> <li>• Shipping activities</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.</li> <li>• Advice to relevant stakeholders prior to the commencement of activities.</li> <li>• All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.</li> </ul>
Marine fauna interactions	<ul style="list-style-type: none"> <li>• Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.</li> <li>• The dredging vessel will have trained crew as marine fauna observers and adhere to the observation and exclusion zones.</li> </ul>
Marine discharges	<ul style="list-style-type: none"> <li>• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable.</li> </ul>
Seabed disturbance	<ul style="list-style-type: none"> <li>• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> <li>• Bathymetric and other surveys will be undertaken to monitor seabed characteristics before and after activities.</li> <li>• A management framework for dredging and backfill activities based on water quality will be developed.</li> <li>• Dredging and spoil disposal activities will be undertaken in compliance with a sea dumping permit.</li> <li>• A minimum 250 m buffer from the Dampier Marine Park boundaries will be in place for the borrow ground dredging activities.</li> </ul>
Vessel interaction	<ul style="list-style-type: none"> <li>• Woodside will notify relevant fishery stakeholders and government maritime safety agencies of specific start and end dates, specific vessel-on-location dates and any exclusion zones prior to commencement of the activity.</li> </ul>
Waste management	<ul style="list-style-type: none"> <li>• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan.</li> <li>• Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.</li> </ul>

	<ul style="list-style-type: none"> <li>Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.</li> </ul>
<b>Unplanned activities</b>	
Hydrocarbon release	<ul style="list-style-type: none"> <li>Appropriate spill response plans, equipment and materials will be in place and maintained.</li> <li>Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.</li> </ul>
Introduction of invasive marine species	<ul style="list-style-type: none"> <li>All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species.</li> <li>Compliance with Australian biosecurity requirements and guidance.</li> <li>Contracted vessels comply with Australian ballast water requirements.</li> </ul>

**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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards

[Redacted signature]

**1.8 Email sent to State fisheries licence holders (Pilbara Line, Pilbara Trap, Pilbara Trawl) (31 August 2021)**

Dear Licence Holder

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

Seabed intervention activities are planned to commence in 2022 and trunkline installation activities in 2023, pending approvals, vessel availability and weather constraints, in water depths ranging from approximately 32 m to 1400 m.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our [website](#)) and map of relevant fisheries is attached. Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

More information on the Scarborough development can be found [here](#).

**Activity:**

<i>Summary:</i>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<i>Location:</i>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<i>Approx. Water Depth (m):</i>	~ 32 m – 1400 m
<i>Earliest commencement date:</i>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<i>Estimated duration:</i>	Approximately 24 months across multiple campaigns.
<i>Distance from Operational Area to nearest port/marina</i>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<i>Distance from Operational Area to nearest marine park</i>	<ul style="list-style-type: none"><li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li></ul>

- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

#### Operational Areas

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

#### Relevant Fisheries

**Commonwealth:** North-West Slope Trawl Fishery

**State:** Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, Marine Aquarium Fishery and Specimen Shell Fishery

**Note:** We note previous WAFIC advice that the Marine Aquarium Fishery and Specimen Shell Fishery are dive and wade fisheries at shallow water depth. We have taken a 'cautionary' approach given the water depth of the proposed activity (~ 32 m) and catch and effort data.

**Commonwealth:** Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery

#### Additional Fisheries

(\*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area)

#### Exclusionary/Cautionary Zone:

Temporary safety exclusion zones will be confirmed prior to the activity commencing and will be issued with notifications to mariners at the time of the activity. The temporary exclusion zones will likely range between 500 – 1500 m depending on the vessel type and activity being carried out.

#### Vessels:

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)

- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Potential risks to commercial fishing and proposed mitigation measures:**

Potential Risk and/or Impact	Mitigation and/or Management Measure
<b>Planned activities</b>	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> <li>• Defence activities</li> <li>• Petroleum activities</li> <li>• Commercial fishing activities</li> <li>• Shipping activities</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.</li> <li>• Advice to relevant stakeholders prior to the commencement of activities.</li> <li>• All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.</li> </ul>
Marine fauna interactions	<ul style="list-style-type: none"> <li>• Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.</li> <li>• The dredging vessel will have trained crew as marine fauna observers and adhere to the observation and exclusion zones.</li> </ul>
Marine discharges	<ul style="list-style-type: none"> <li>• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside’s Environmental Performance Standards where applicable.</li> </ul>
Seabed disturbance	<ul style="list-style-type: none"> <li>• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> <li>• Bathymetric and other surveys will be undertaken to monitor seabed characteristics before and after activities.</li> <li>• A management framework for dredging and backfill activities based on water quality will be developed.</li> <li>• Dredging and spoil disposal activities will be undertaken in compliance with a sea dumping permit.</li> <li>• A minimum 250 m buffer from the Dampier Marine Park boundaries will be in place for the borrow ground dredging activities.</li> </ul>
Vessel interaction	<ul style="list-style-type: none"> <li>• Woodside will notify relevant fishery stakeholders and government maritime safety agencies of specific start and end</li> </ul>



	dates, specific vessel-on-location dates and any exclusion zones prior to commencement of the activity.
Waste management	<ul style="list-style-type: none"> <li>Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan.</li> <li>Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.</li> <li>Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.</li> </ul>
<b>Unplanned activities</b>	
Hydrocarbon release	<ul style="list-style-type: none"> <li>Appropriate spill response plans, equipment and materials will be in place and maintained.</li> <li>Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.</li> </ul>
Introduction of invasive marine species	<ul style="list-style-type: none"> <li>All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species.</li> <li>Compliance with Australian biosecurity requirements and guidance.</li> <li>Contracted vessels comply with Australian ballast water requirements.</li> </ul>

**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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards



**1.9 Email sent to Commonwealth fisheries licence holders (North West Slope Trawl Fishery, Western Deepwater Trawl, Western Skipjack, Northern Prawn, Western Tuna and Billfish, Southern Bluefin Tuna) (31 August 2021)**

Dear Licence Holder

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

Seabed intervention activities are planned to commence in 2022 and trunkline installation activities in 2023, pending approvals, vessel availability and weather constraints, in water depths ranging from approximately 32 m to 1400 m.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our [website](#)) and map of relevant fisheries is attached. Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth. Based on AFMA advice, Woodside is consulting with all Commonwealth fishery licence holders with entitlements to fish in the area.

More information on the Scarborough development can be found [here](#).

**Activity:**

<i>Summary:</i>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<i>Location:</i>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<i>Approx. Water Depth (m):</i>	~ 32 m – 1400 m
<i>Earliest commencement date:</i>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints.

	Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<i>Estimated duration:</i>	Approximately 24 months across multiple campaigns.
<i>Distance from Operational Area to nearest port/marina</i>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<i>Distance from Operational Area to nearest marine park</i>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<i>Operational Areas</i>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.</li></ul>
<i>Relevant Fisheries</i>	<b>Commonwealth:</b> North-West Slope Trawl Fishery <b>State:</b> Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, Marine Aquarium Fishery and Specimen Shell Fishery. <b>Commonwealth:</b> Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery
<i>Additional Fisheries</i> <i>(*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area)</i>	
<i>Exclusionary/Cautious Zone:</i>	Temporary safety exclusion zones will be confirmed prior to the activity commencing and will be issued with notifications to mariners at the time of the activity. The temporary exclusion zones will likely range between 500

– 1500 m depending on the vessel type and activity being carried out.

Vessels:

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Potential risks to commercial fishing and proposed mitigation measures:**

Potential Risk and/or Impact	Mitigation and/or Management Measure
<b>Planned activities</b>	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> <li>• Defence activities</li> <li>• Petroleum activities</li> <li>• Commercial fishing activities</li> <li>• Shipping activities</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.</li> <li>• Advice to relevant stakeholders prior to the commencement of activities.</li> <li>• All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.</li> </ul>
Marine fauna interactions	<ul style="list-style-type: none"> <li>• Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.</li> <li>• The dredging vessel will have trained crew as marine fauna observers and adhere to the observation and exclusion zones.</li> </ul>
Marine discharges	<ul style="list-style-type: none"> <li>• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside’s Environmental Performance Standards where applicable.</li> </ul>
Seabed disturbance	<ul style="list-style-type: none"> <li>• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> <li>• Bathymetric and other surveys will be undertaken to monitor seabed characteristics before and after activities.</li> <li>• A management framework for dredging and backfill activities based on water quality will be developed.</li> </ul>

	<ul style="list-style-type: none"> <li>• Dredging and spoil disposal activities will be undertaken in compliance with a sea dumping permit.</li> <li>• A minimum 250 m buffer from the Dampier Marine Park boundaries will be in place for the borrow ground dredging activities.</li> </ul>
Vessel interaction	<ul style="list-style-type: none"> <li>• Woodside will notify relevant fishery stakeholders and government maritime safety agencies of specific start and end dates, specific vessel-on-location dates and any exclusion zones prior to commencement of the activity.</li> </ul>
Waste management	<ul style="list-style-type: none"> <li>• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan.</li> <li>• Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.</li> <li>• Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.</li> </ul>
<b>Unplanned activities</b>	
Hydrocarbon release	<ul style="list-style-type: none"> <li>• Appropriate spill response plans, equipment and materials will be in place and maintained.</li> <li>• Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.</li> </ul>
Introduction of invasive marine species	<ul style="list-style-type: none"> <li>• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species.</li> <li>• Compliance with Australian biosecurity requirements and guidance.</li> <li>• Contracted vessels comply with Australian ballast water requirements.</li> </ul>

**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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards

**1.10 Letter sent to licence holders (Mackerel Areas 2 and 3, Pilbara Crab, Marine Aquarium, Specimen Shell, Nickol Bay Prawn, Southern Bluefin Tuna)  
(1 September 2021)**

31 August 2021

Dear Licence Holder

**WOODSIDE CONSULTATION - SCARBOROUGH SEABED INTERVENTION AND TRUNKLINE INSTALLATION ENVIRONMENT PLAN**

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

Seabed intervention activities are planned to commence in 2022 and trunkline installation activities in 2023, pending approvals, vessel availability and weather constraints, in water depths ranging from approximately 32 m to 1400 m.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website) and map of relevant fisheries is attached.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth. Based on AFMA advice, Woodside is consulting with all Commonwealth fishery licence holders with entitlements to fish in the area.

More information on the Scarborough development can be found on our website.

**Activity:**



<i>Summary:</i>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<i>Location:</i>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
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<i>Earliest commencement date:</i>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<i>Estimated duration:</i>	Approximately 24 months across multiple campaigns.
<i>Distance from Operational Area to nearest port/marina</i>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<i>Distance from Operational Area to nearest marine park</i>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<i>Operational Areas</i>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.</li></ul>
<i>Relevant Fisheries</i>	<b>Commonwealth:</b> North-West Slope Trawl Fishery  <b>State:</b> Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, Marine Aquarium Fishery and Specimen Shell Fishery.

**Additional Fisheries** (\*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area) **Commonwealth:** Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery

**Exclusionary/Cautious Zone:** Temporary safety exclusion zones will be confirmed prior to the activity commencing and will be issued with notifications to mariners at the time of the activity. The temporary exclusion zones will likely range between 500 – 1500 m depending on the vessel type and activity being carried out.

- Vessels:**
- Trailing suction hopper dredge (TSHD)
  - Offshore construction vessel (OCV)
  - Fall pipe vessel (rock dump)
  - Primary Installation Vessel (PIV) multi-joint operation
  - Shallow Water Lay Barge (SWLB)
  - Anchor handling vessel/tug
  - Pipe supply vessels
  - Survey vessels
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**Potential risks to commercial fishing and proposed mitigation measures:**

Potential Risk and/or Impact	Mitigation and/or Management Measure
<b>Planned activities</b>	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> <li>• Defence activities</li> <li>• Petroleum activities</li> <li>• Commercial fishing activities</li> <li>• Shipping activities</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.</li> <li>• Advice to relevant stakeholders prior to the commencement of activities.</li> <li>• All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.</li> </ul>
Marine fauna interactions	<ul style="list-style-type: none"> <li>• Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.</li> <li>• The dredging vessel will have trained crew as marine fauna observers and adhere to the observation and exclusion zones.</li> </ul>
Marine discharges	<ul style="list-style-type: none"> <li>• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside’s Environmental Performance Standards where applicable.</li> </ul>
Seabed disturbance	<ul style="list-style-type: none"> <li>• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> <li>• Bathymetric and other surveys will be undertaken to monitor seabed characteristics before and after activities.</li> <li>• A management framework for dredging and backfill activities based on water quality will be developed.</li> <li>• Dredging and spoil disposal activities will be undertaken in compliance with a sea dumping permit.</li> </ul>





Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

We have identified potential impacts to commercial fishers and the environment and are currently working to reduce these risks to as low as reasonably practicable as we develop the EP. These risks are summarised below.

An information sheet (also on our [website](#)) and map of relevant fisheries are attached.

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

**Activity:**

<i>Summary:</i>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
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<i>Earliest commencement date:</i>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<i>Estimated duration:</i>	Approximately 24 months across multiple campaigns.
<i>Distance from Operational Area to nearest port/marina</i>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<i>Distance from Operational Area to nearest marine park</i>	<ul style="list-style-type: none"><li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li></ul>

- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

#### *Operational Areas*

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

#### *Relevant Fisheries*

**Commonwealth:** North-West Slope Trawl Fishery

**State:** Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, Marine Aquarium Fishery and Specimen Shell Fishery.

#### *Additional Fisheries*

(\*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area)

**Commonwealth:** Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery

#### *Relevant State Fisheries*

Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, Marine Aquarium Fishery and Specimen Shell Fishery

#### *Exclusionary/Cautious Zone:*

Temporary safety exclusion zones will be confirmed prior to the activity commencing and will be issued with notifications to mariners at the time of the activity. The temporary exclusion zones will likely range between 500 – 1500 m depending on the vessel type and activity being carried out.

#### *Vessels:*

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)

- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Potential risks to commercial fishing and proposed mitigation measures:**

Potential Risk and/or Impact	Mitigation and/or Management Measure
<b>Planned activities</b>	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> <li>• Defence activities</li> <li>• Petroleum activities</li> <li>• Commercial fishing activities</li> <li>• Shipping activities</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.</li> <li>• Advice to relevant stakeholders prior to the commencement of activities.</li> <li>• All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.</li> </ul>
Marine fauna interactions	<ul style="list-style-type: none"> <li>• Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.</li> <li>• The dredging vessel will have trained crew as marine fauna observers and adhere to the observation and exclusion zones.</li> </ul>
Marine discharges	<ul style="list-style-type: none"> <li>• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside’s Environmental Performance Standards where applicable.</li> </ul>
Seabed disturbance	<ul style="list-style-type: none"> <li>• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> <li>• Bathymetric and other surveys will be undertaken to monitor seabed characteristics before and after activities.</li> <li>• A management framework for dredging and backfill activities based on water quality will be developed.</li> <li>• Dredging and spoil disposal activities will be undertaken in compliance with a sea dumping permit.</li> <li>• A minimum 250 m buffer from the Dampier Marine Park boundaries will be in place for the borrow ground dredging activities.</li> </ul>
Vessel interaction	<ul style="list-style-type: none"> <li>• Woodside will notify relevant fishery stakeholders and government maritime safety agencies of specific start and end</li> </ul>

	dates, specific vessel-on-location dates and any exclusion zones prior to commencement of the activity.
Waste management	<ul style="list-style-type: none"> <li>Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan.</li> <li>Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.</li> <li>Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.</li> </ul>
<b>Unplanned activities</b>	
Hydrocarbon release	<ul style="list-style-type: none"> <li>Appropriate spill response plans, equipment and materials will be in place and maintained.</li> <li>Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.</li> </ul>
Introduction of invasive marine species	<ul style="list-style-type: none"> <li>All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species.</li> <li>Compliance with Australian biosecurity requirements and guidance.</li> <li>Contracted vessels comply with Australian ballast water requirements.</li> </ul>

**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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards

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**1.12 Email sent to Karratha Recreational Marine Users and WA Game Fishing Association (31 August 2021)**

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. It is also available on our [website](#).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

**Activity:**

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li> </ul>



- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

### **Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

### **Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering 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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards

### 1.13 Email sent to Pearl Producers Association (31 August 2021)

Dear [REDACTED]

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. It is also available on our [website](#).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

#### **Activity:**

**Summary:**

Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

**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 block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.

**Approx. Water Depth (m):**

~ 32 m – 1400 m

**Earliest commencement date:**

Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints

Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.



<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<b>Operational Areas</b>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.</li></ul>
<b>Exclusionary/Cautious Zone:</b>	Temporary safety exclusion zones will be confirmed prior to the activity commencing and will be issued with notifications to mariners at the time of the activity. The temporary exclusion zones will likely range between 500 – 1500 m depending on the vessel type and activity being carried out.
<b>Vessels:</b>	<ul style="list-style-type: none"><li>• Trailing suction hopper dredge (TSHD)</li><li>• Offshore construction vessel (OCV)</li><li>• Fall pipe vessel (rock dump)</li><li>• Primary Installation Vessel (PIV) multi-joint operation</li><li>• Shallow Water Lay Barge (SWLB)</li><li>• Anchor handling vessel/tug</li><li>• Pipe supply vessels</li><li>• Survey vessels</li><li>• Support vessels</li><li>• Fuel bunkering vessels</li></ul>

**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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards

[Redacted signature block]

#### **1.14 Email sent to Australian Fisheries Management Authority (AFMA) and CFA (31 August 2021)**

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

We have identified potential impacts to commercial fishers and the environment and are currently working to reduce these risks to as low as reasonably practicable as we develop the EP. These risks are summarised below.

An information sheet (also on our [website](#)) and map of relevant fisheries are attached. This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).  
**Activity:**

<i>Summary:</i>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<i>Location:</i>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<i>Approx. Water Depth (m):</i>	~ 32 m – 1400 m
<i>Earliest commencement date:</i>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<i>Estimated duration:</i>	Approximately 24 months across multiple campaigns.
<i>Distance from Operational Area to nearest port/marina</i>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<i>Distance from Operational Area to nearest marine park</i>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<i>Operational Areas</i>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.</li></ul>

*Relevant Fisheries*

**Commonwealth:** North-West Slope Trawl Fishery

**State:** Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, Marine Aquarium Fishery and Specimen Shell Fishery.

*Additional Fisheries*

(\*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area)

**Commonwealth:** Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery

*Relevant Commonwealth Fisheries*

North-West Slope Trawl Fishery

*Additional Fisheries*

(\*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area)

Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery

*Vessels:*

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Potential risks to commercial fishing and proposed mitigation measures:**

Potential Risk and/or Impact	Mitigation and/or Management Measure
<b>Planned activities</b>	
Interests of relevant stakeholders with respect to: <ul style="list-style-type: none"> <li>• Defence activities</li> <li>• Petroleum activities</li> <li>• Commercial fishing activities</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.</li> <li>• Advice to relevant stakeholders prior to the commencement of activities.</li> </ul>

• Shipping activities	<ul style="list-style-type: none"> <li>All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.</li> </ul>
Marine fauna interactions	<ul style="list-style-type: none"> <li>Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.</li> <li>The dredging vessel will have trained crew as marine fauna observers and adhere to the observation and exclusion zones.</li> </ul>
Marine discharges	<ul style="list-style-type: none"> <li>All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable.</li> </ul>
Seabed disturbance	<ul style="list-style-type: none"> <li>Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> <li>Bathymetric and other surveys will be undertaken to monitor seabed characteristics before and after activities.</li> <li>A management framework for dredging and backfill activities based on water quality will be developed.</li> <li>Dredging and spoil disposal activities will be undertaken in compliance with a sea dumping permit.</li> <li>A minimum 250 m buffer from the Dampier Marine Park boundaries will be in place for the borrow ground dredging activities.</li> </ul>
Vessel interaction	<ul style="list-style-type: none"> <li>Woodside will notify relevant fishery stakeholders and government maritime safety agencies of specific start and end dates, specific vessel-on-location dates and any exclusion zones prior to commencement of the activity.</li> </ul>
Waste management	<ul style="list-style-type: none"> <li>Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan.</li> <li>Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.</li> <li>Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.</li> </ul>
<b>Unplanned activities</b>	
Hydrocarbon release	<ul style="list-style-type: none"> <li>Appropriate spill response plans, equipment and materials will be in place and maintained.</li> <li>Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.</li> </ul>
Introduction of invasive marine species	<ul style="list-style-type: none"> <li>All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species.</li> </ul>

- Compliance with Australian biosecurity requirements and guidance.
- Contracted vessels comply with Australian ballast water requirements.

**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](mailto: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 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.

Please provide your views by 30 September 2021.

Regards

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**1.15 Email sent to Chevron Australia, Santos, Western Gas, Vermilion Energy, KUFPEC, Jadestone Energy – 31 August 2021**

Dear Titleholder,

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#). A map showing the proposed activity relevant to adjacent petroleum titles is also attached.

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.



More information on the Scarborough development can be found [here](#).

**Activity:**

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<b>Operational Areas</b>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east</li></ul>

of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering 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](mailto: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 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.

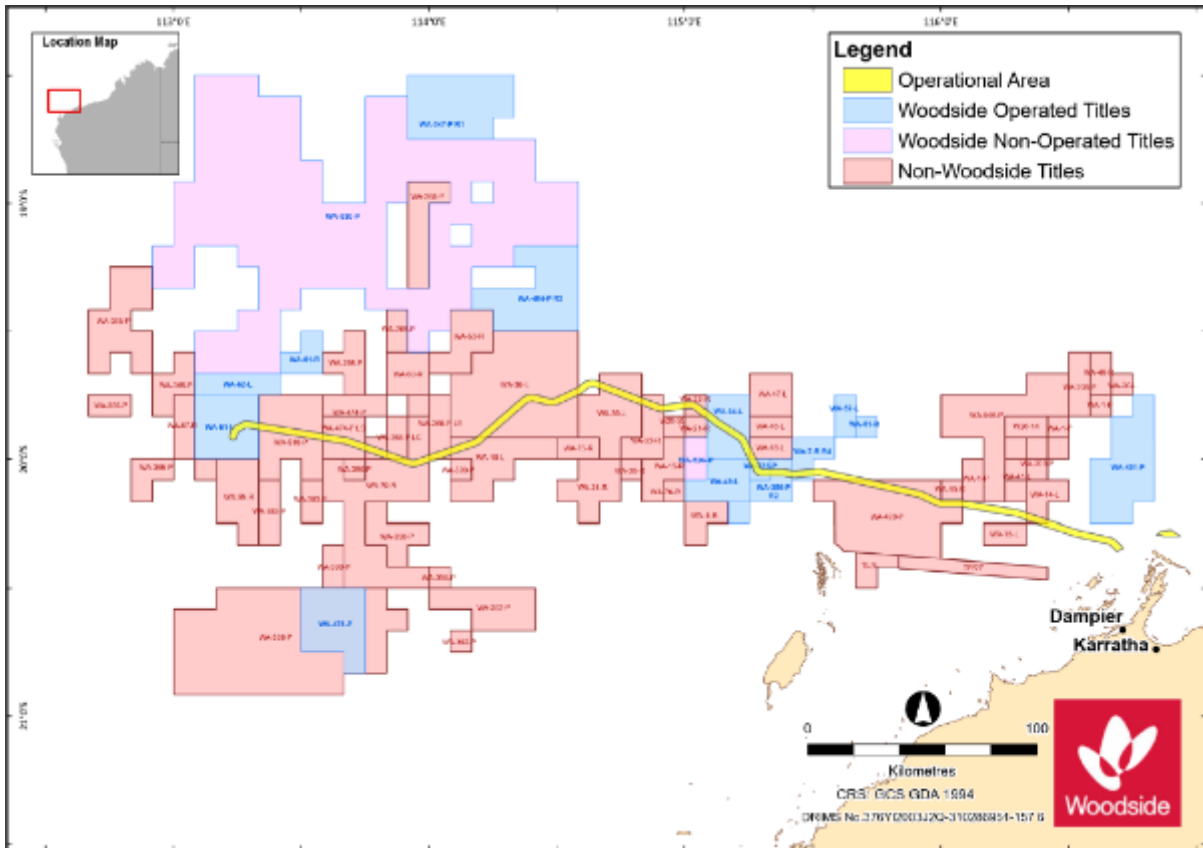
Please provide your views by 30 September 2021.

Regards

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### 1.15.1 Titleholders map sent to Chevron, Santos, Western Gas, Vermilion Energy, KUFPEC, Jadestone Energy (31 August 2021), Coastal Oil and Gas (11 November 2022)



### 1.16 Email sent to Australian Southern Bluefin Tuna Industry Association (ASBTIA) (31 August 2021)

Dear Stakeholder

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

We have identified potential impacts to commercial fishers and the environment and are currently working to reduce these risks to as low as reasonably practicable as we develop the EP. These risks are summarised below.

An information sheet (also on our [website](#)) and map of relevant fisheries are attached. This 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. Woodside is proposing four Commonwealth EPs for

the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

### Activity:

<i>Summary:</i>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<i>Location:</i>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<i>Approx. Water Depth (m):</i>	~ 32 m – 1400 m
<i>Earliest commencement date:</i>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<i>Estimated duration:</i>	Approximately 24 months across multiple campaigns.
<i>Distance from Operational Area to nearest port/marina</i>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<i>Distance from Operational Area to nearest marine park</i>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<i>Operational Areas</i>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is</li></ul>

approximately 300 m wide and runs ~17 km from the State waters boundary.

- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

*Relevant Fisheries*

**Commonwealth:** North-West Slope Trawl Fishery

**State:** Mackerel Managed Fishery (Area 2 and 3), Pilbara Crab Managed Fishery, Nickol Bay Prawn Managed Fishery, Pilbara Trawl Fishery, Pilbara Trap Fishery, Pilbara Line Fishery, Marine Aquarium Fishery and Specimen Shell Fishery.

*Additional Fisheries*  
 (\*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area)

**Commonwealth:** Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery

*Relevant Commonwealth Fisheries*

North-West Slope Trawl Fishery

*Additional Fisheries*  
 (\*Consultation based on AFMA advice to consult all fisheries with entitlements to fish in the area)

Western Deepwater Trawl Fishery, Western Skipjack Fishery, Southern Bluefin Tuna Fishery, Western Tuna and Billfish Fishery

*Vessels:*

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Potential risks to commercial fishing and proposed mitigation measures:**

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	

<p>Interests of relevant stakeholders with respect to:</p> <ul style="list-style-type: none"> <li>• Defence activities</li> <li>• Petroleum activities</li> <li>• Commercial fishing activities</li> <li>• Shipping activities</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation with relevant petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform decision making for the proposed activity and development of the EP.</li> <li>• Advice to relevant stakeholders prior to the commencement of activities.</li> <li>• All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.</li> </ul>
<p>Marine fauna interactions</p>	<ul style="list-style-type: none"> <li>• Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.</li> <li>• The dredging vessel will have trained crew as marine fauna observers and adhere to the observation and exclusion zones.</li> </ul>
<p>Marine discharges</p>	<ul style="list-style-type: none"> <li>• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable.</li> </ul>
<p>Seabed disturbance</p>	<ul style="list-style-type: none"> <li>• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance.</li> <li>• Bathymetric and other surveys will be undertaken to monitor seabed characteristics before and after activities.</li> <li>• A management framework for dredging and backfill activities based on water quality will be developed.</li> <li>• Dredging and spoil disposal activities will be undertaken in compliance with a sea dumping permit.</li> <li>• A minimum 250 m buffer from the Dampier Marine Park boundaries will be in place for the borrow ground dredging activities.</li> </ul>
<p>Vessel interaction</p>	<ul style="list-style-type: none"> <li>• Woodside will notify relevant fishery stakeholders and government maritime safety agencies of specific start and end dates, specific vessel-on-location dates and any exclusion zones prior to commencement of the activity.</li> </ul>
<p>Waste management</p>	<ul style="list-style-type: none"> <li>• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan.</li> <li>• Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment.</li> <li>• Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.</li> </ul>
<p><b>Unplanned activities</b></p>	
<p>Hydrocarbon release</p>	<ul style="list-style-type: none"> <li>• Appropriate spill response plans, equipment and materials will be in place and maintained.</li> </ul>

	<ul style="list-style-type: none"><li>• Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.</li></ul>
Introduction of invasive marine species	<ul style="list-style-type: none"><li>• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species.</li><li>• Compliance with Australian biosecurity requirements and guidance.</li><li>• Contracted vessels comply with Australian ballast water requirements.</li></ul>

**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](mailto: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 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.

Please provide your views by 30 September 2021.  
Regards

**1.17 Email sent to Murujuga Aboriginal Corporation (31 August 2021)**

Dear [REDACTED]

Further to our brief discussion this morning on this matter, Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth). Consultation regarding this matter forms part of the consultation between Woodside and MAC agreed in the 2 June 2021 letter. The information here is for your awareness. A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. It is also available on our [website](#).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

### Activity:

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<b>Operational Areas</b>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li></ul>

- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering 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](mailto: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 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.

Please provide your views by 30 September 2021.

Kind Regards,

[REDACTED]

[REDACTED]

**1.18 Email sent to Karratha Community Liaison Group (including Pilbara Ports Authority (PPA)) – 31 August 2021**

Dear Karratha Community Liaison Group members,

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.



A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. It is also available on our [website](#).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

**Activity:**

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li> </ul>



## Operational Areas

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

## Vessels:

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering 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](mailto: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 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.

Please provide your views by 30 September 2021.

Best regards,

[Redacted signature]

### 1.18.1 Oil Pollution First Strike Plan emailed to Pilbara Ports Authority – 5 November 2021

Dear [REDACTED]

As part of Woodside's ongoing consultation for its current and planned activities, and as agreed during a recent meeting between the Woodside Scarborough Project Team and Pilbara Ports Authority (PPA), I would like to advise PPA that Woodside is preparing the *Scarborough Subsea Intervention and Trunkline Installation Environment Plan* to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the proposed Scarborough development and would like to offer PPA the opportunity to provide feedback on the First Strike Plan.

Information is presented as follows:

- A Consultation Information Sheet providing information on the proposed activities is available on Woodside's website [here](#).
- The *Scarborough Subsea Infrastructure and Trunkline Installation 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 propose to submit an EP in December 2021. Should you require additional information or have a comment to make about the First Strike Plan, please contact me by close of business 6 December to allow us sufficient time to inform our activity planning and EP development.

Feedback can be submitted via email or letter to: [feedback@woodside.com.au](mailto:feedback@woodside.com.au) or by phone at [REDACTED].

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.

We look forward to hearing from you.

Many thanks,

[REDACTED]  
[REDACTED]

### Woodside Feedback

## 1.19 Email sent to KDCCI (31 August 2021)

Dear [REDACTED]

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

As part of this process, Woodside is consulting the Karratha and District Chamber of Commerce individually and as a member of the Karratha Community Liaison Group. A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. It is also available on our [website](#).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

### Activity:

**Summary:**

Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

**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 block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.

**Approx. Water Depth (m):**

~ 32 m – 1400 m

**Earliest commencement date:**

Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints

Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

**Estimated duration:** Approximately 24 months across multiple campaigns

**Distance from Operational Area to nearest port/marina** Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering 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](mailto: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 Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 30 September 2021.

Best regards,

[Redacted]  
[Redacted]

### 1.20 Email sent to City of Karratha (31 August 2021)

Dear [Redacted]

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

As part of this process, Woodside is consulting the City of Karratha individually and as a member of the Karratha Community Liaison Group. A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. It is also available on our [website](#).

This 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. Woodside is proposing four Commonwealth EPs for the Scarborough development to be submitted to NOPSEMA in the next two years, and will consult with all relevant stakeholders ahead of each EP.

A separate EP is planned to address Trunkline installation and seabed intervention activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety. The location of the proposed Trunkline in State waters is shown on the Consultation Information Sheet.

More information on the Scarborough development can be found [here](#).

#### Activity:

**Summary:**

Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

**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

block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.

**Approx. Water Depth (m):** ~ 32 m – 1400 m

**Earliest commencement date:** Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  
Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

**Estimated duration:** Approximately 24 months across multiple campaigns

**Distance from Operational Area to nearest port/marina** Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
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- Pipe supply vessels
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- Support vessels
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**Feedback:**

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[Feedback@woodside.com.au](mailto: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 Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 30 September 2021.

Best regards,

[Redacted signature]

**1.21 Email sent to Conservation Council of WA (CCWA) – 31 August 2021**

Dear [Redacted],

Woodside is planning to submit an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#).

An Environment Plan for this activity will be submitted in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

If you have any comments about these activities in this location then please respond to Woodside at [Feedback@woodside.com.au](mailto: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 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.

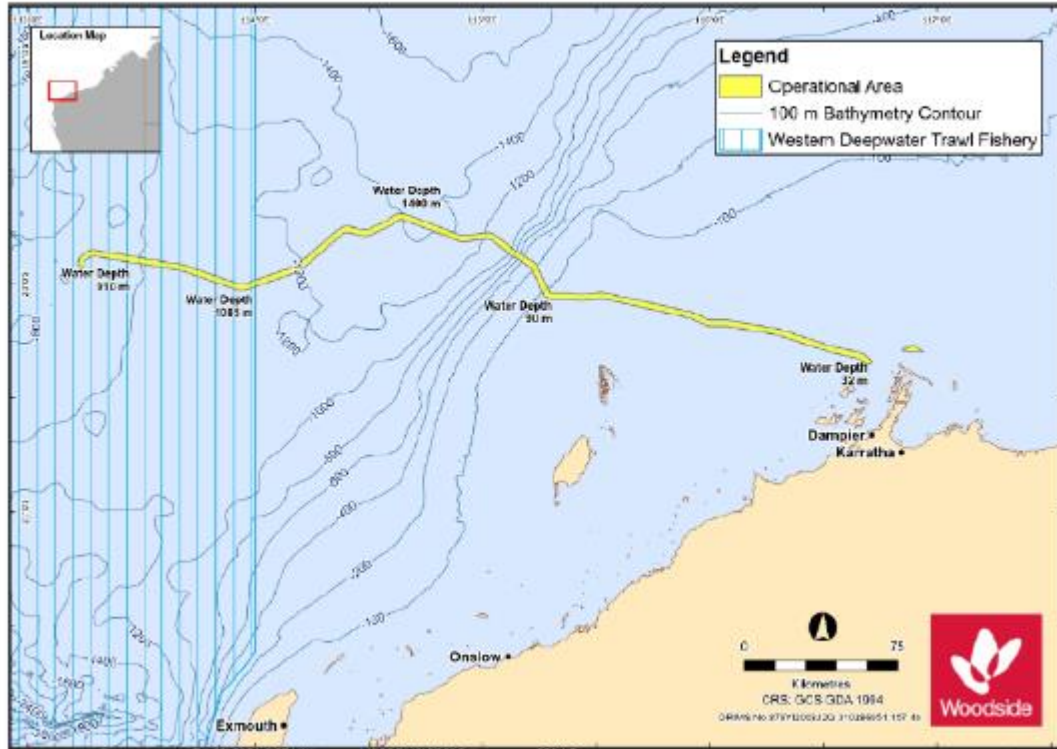
**Please provide your feedback by 30 September 2021.**

Woodside Feedback

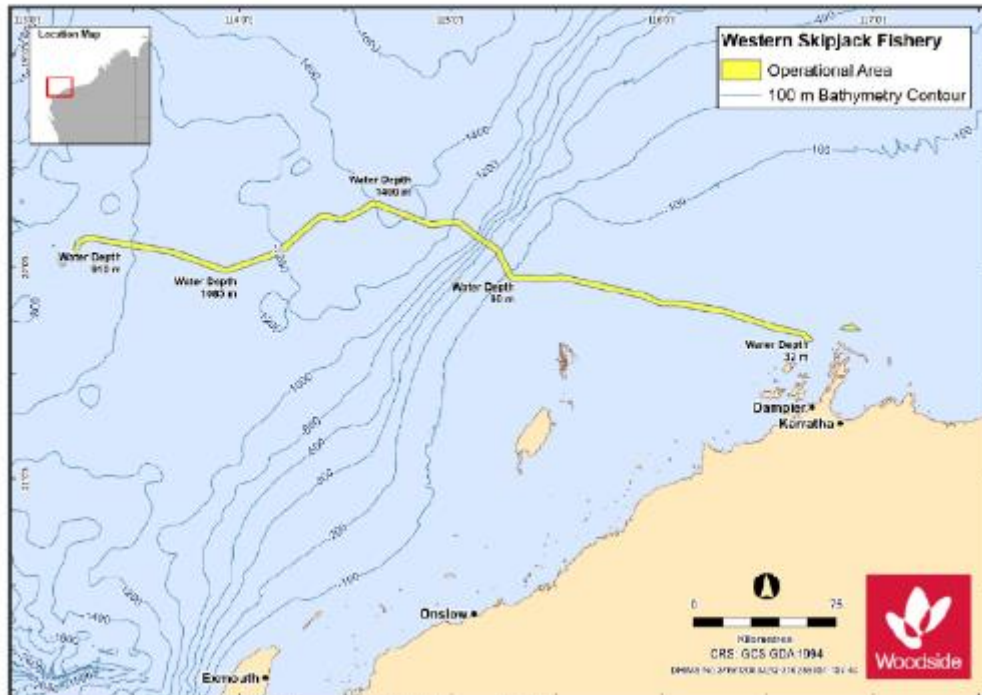
**1.22 Commonwealth Fisheries map sent to DCCEEW / DAFF, WAFIC, DPIRD, PPA, AFMA, CFA, ASBTIA, Commonwealth fisheries licence holders (North West Slope Trawl Fishery, Western Deepwater Trawl, Western Skipjack, Northern Prawn, Western Tuna and Billfish, Southern Bluefin Tuna), Australian Southern Bluefin Tuna Industry Association (31 August 2021)**



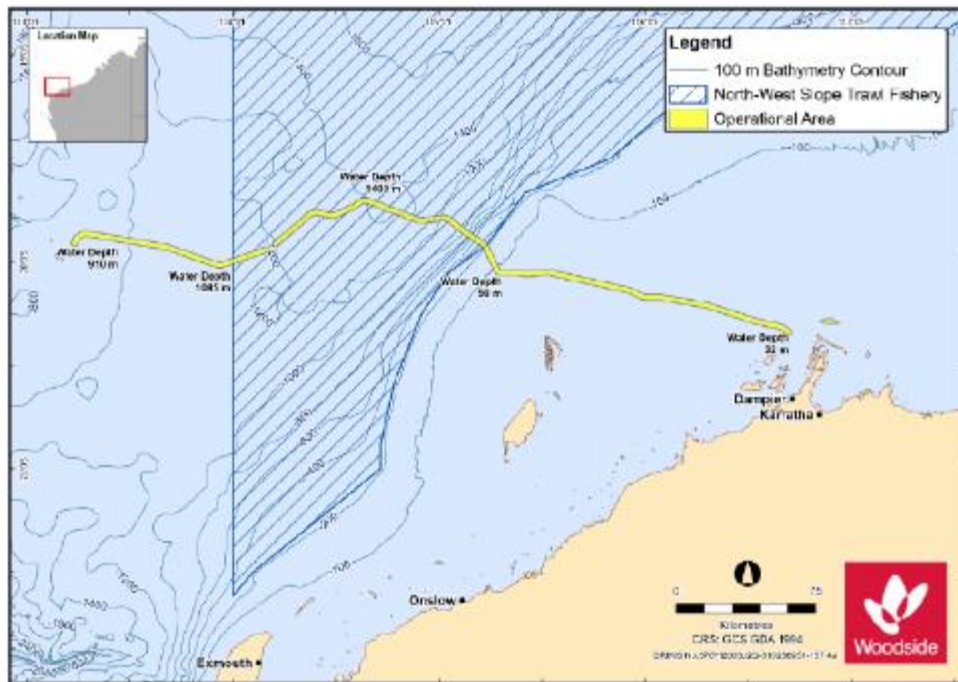
### Western Deepwater Trawl Fishery



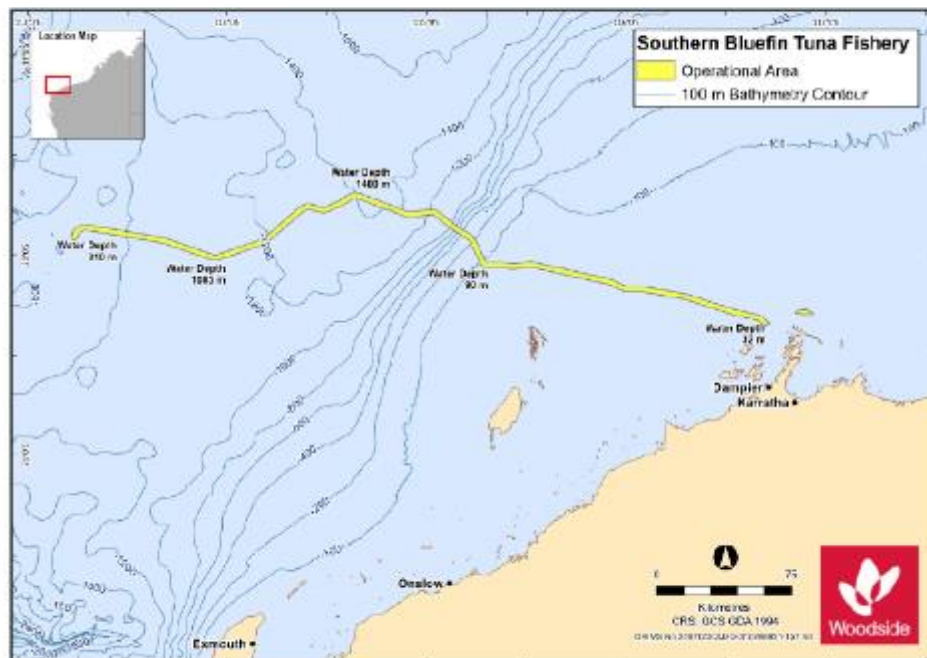
### Western Skipjack Fishery



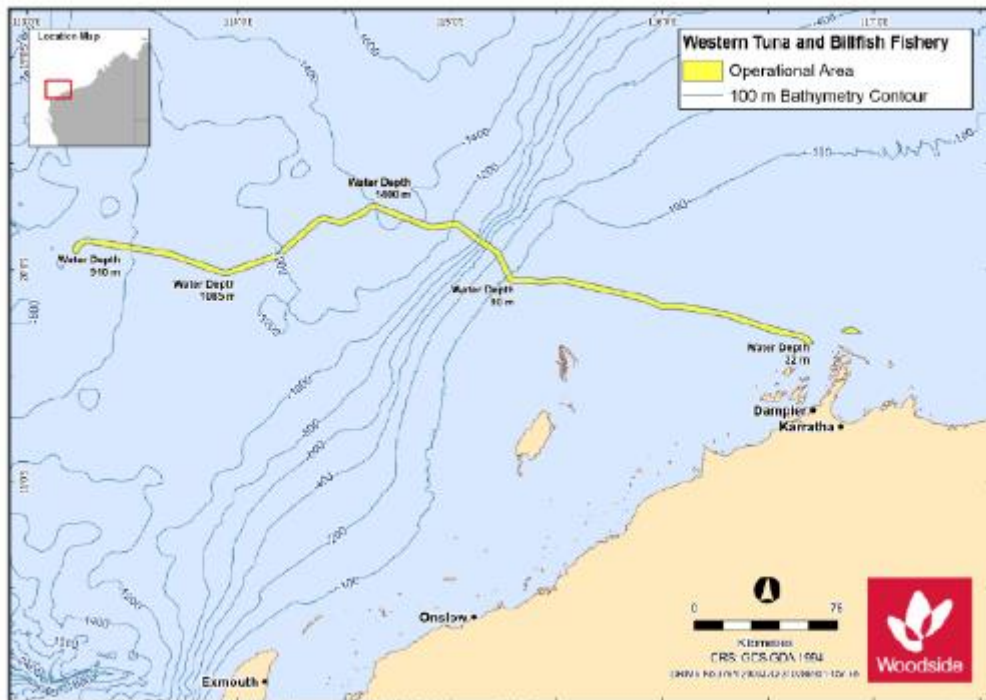
### North-West Slope Trawl Fishery



### Southern Bluefin Tuna Fishery



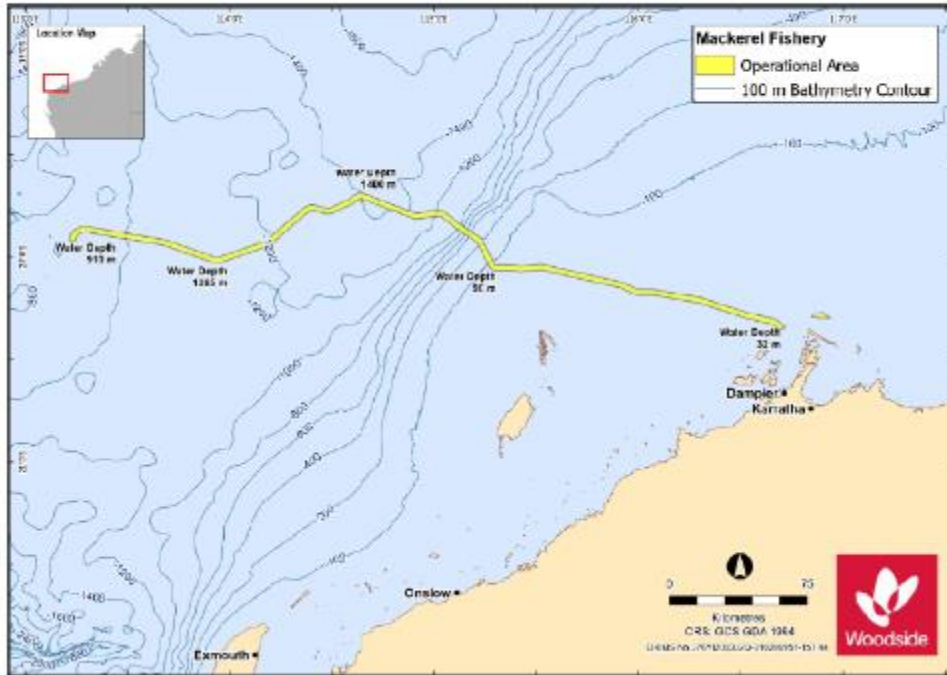
### Western Tuna and Billfish Fishery



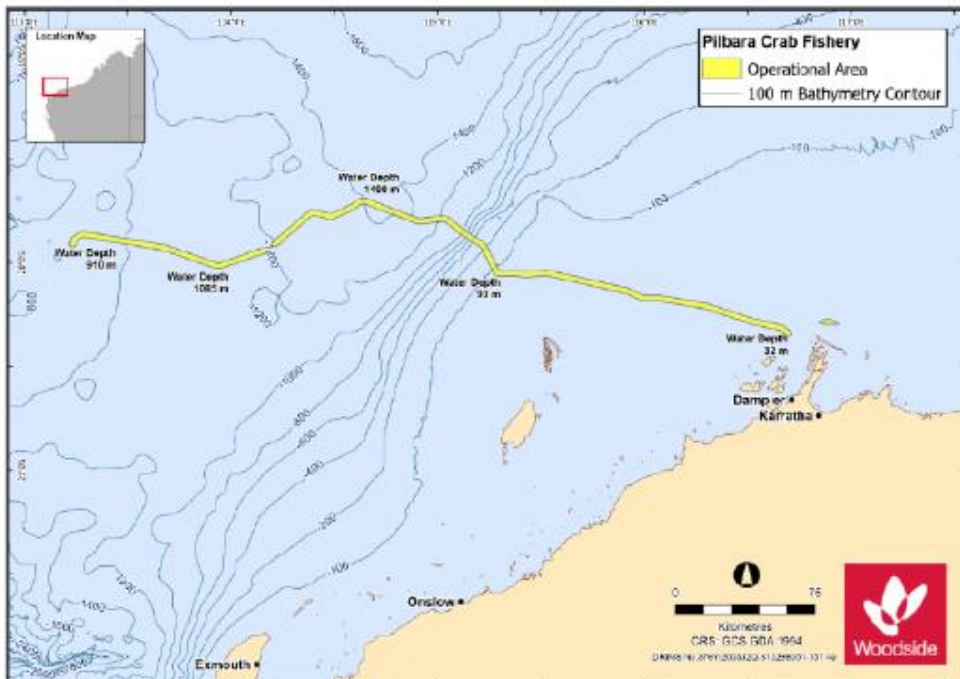


**1.23 State Fisheries map sent to, WAFIC, State fisheries licence holders (Pilbara Trap, Pilbara Trawl, Pilbara Line), DPIRD, AFMA, CFA, Pearl Producers Association, Australian Southern Bluefin Tuna Industry Association (ASBTIA) (31 August 2021)**

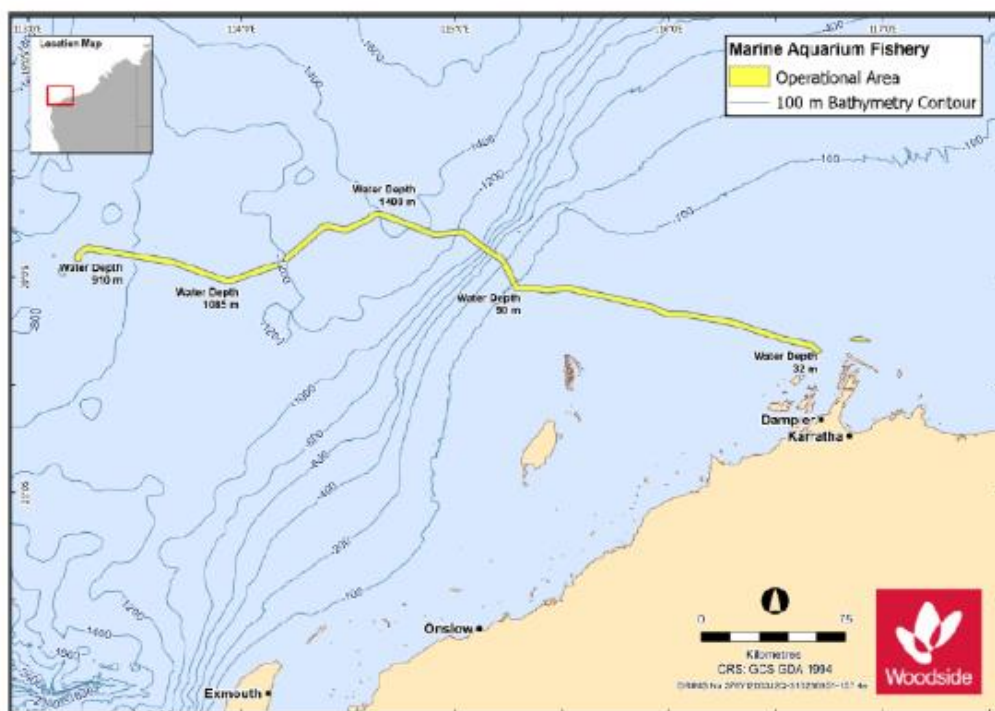
**Mackerel Managed Fishery (Areas 2 and 3)**



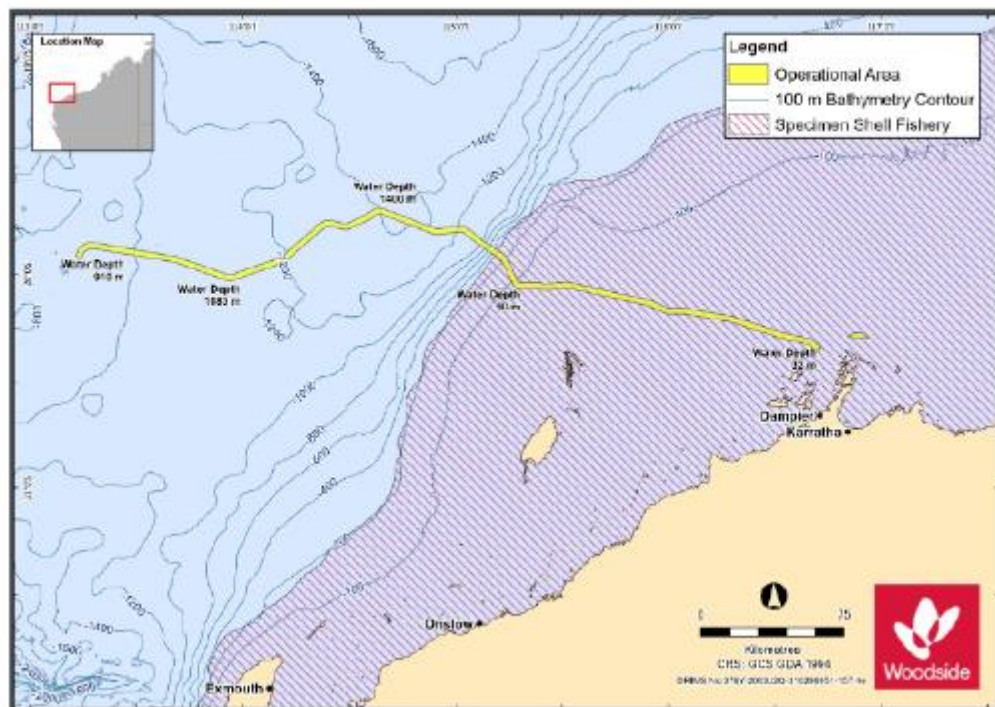
**Pilbara Crab Fishery**



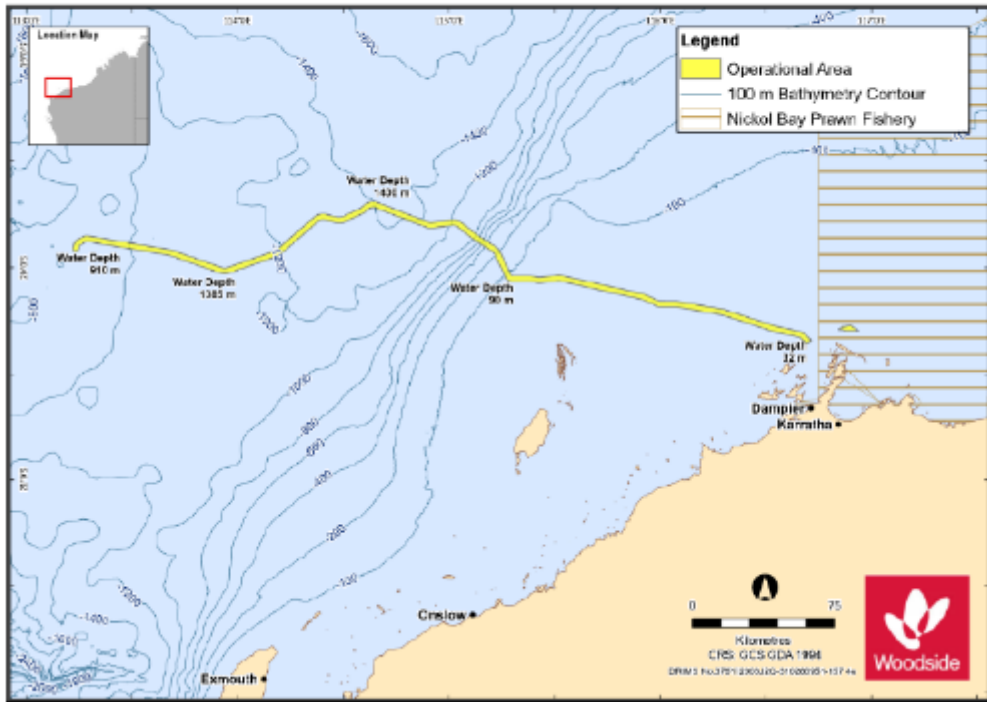
### Marine Aquarium Managed Fishery



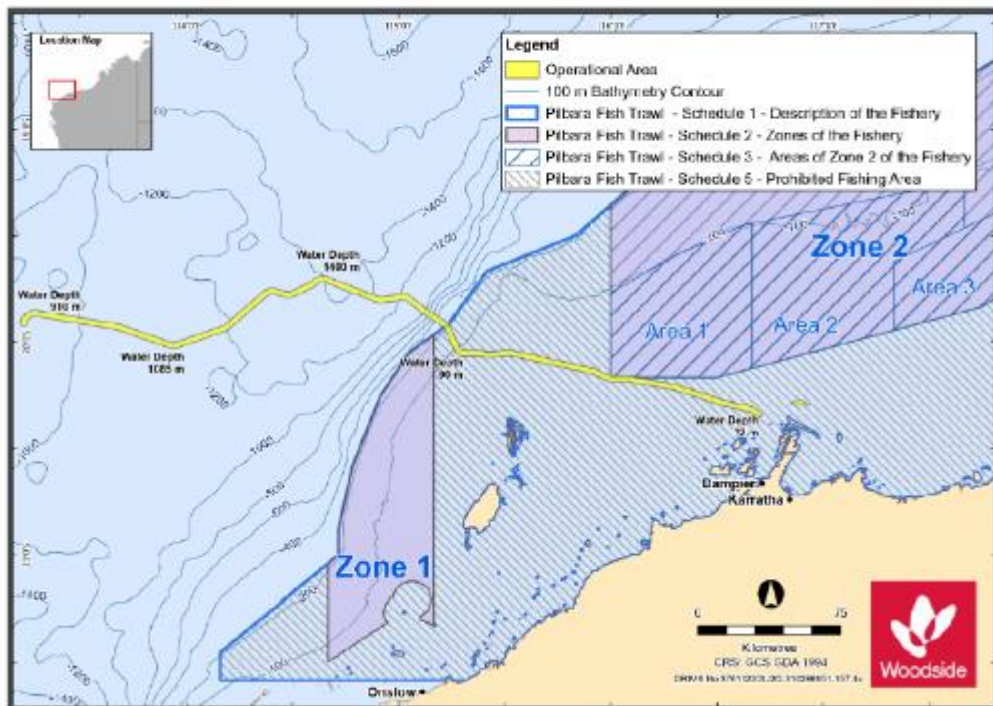
### Specimen Shell Fishery



Nickol Bay Prawn Managed Fishery

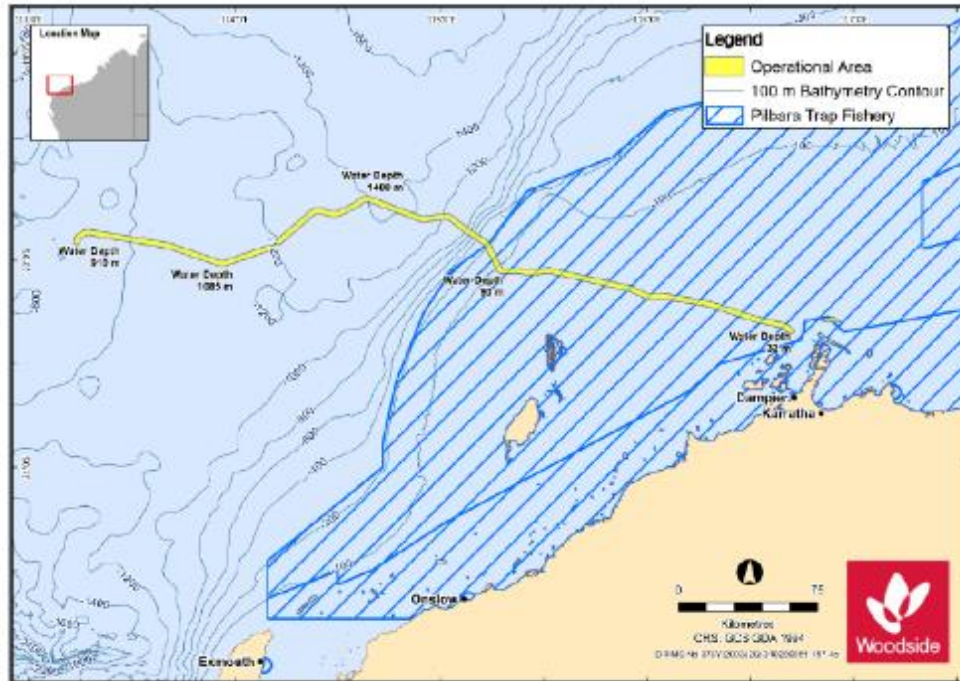


Pilbara Trawl Fishery

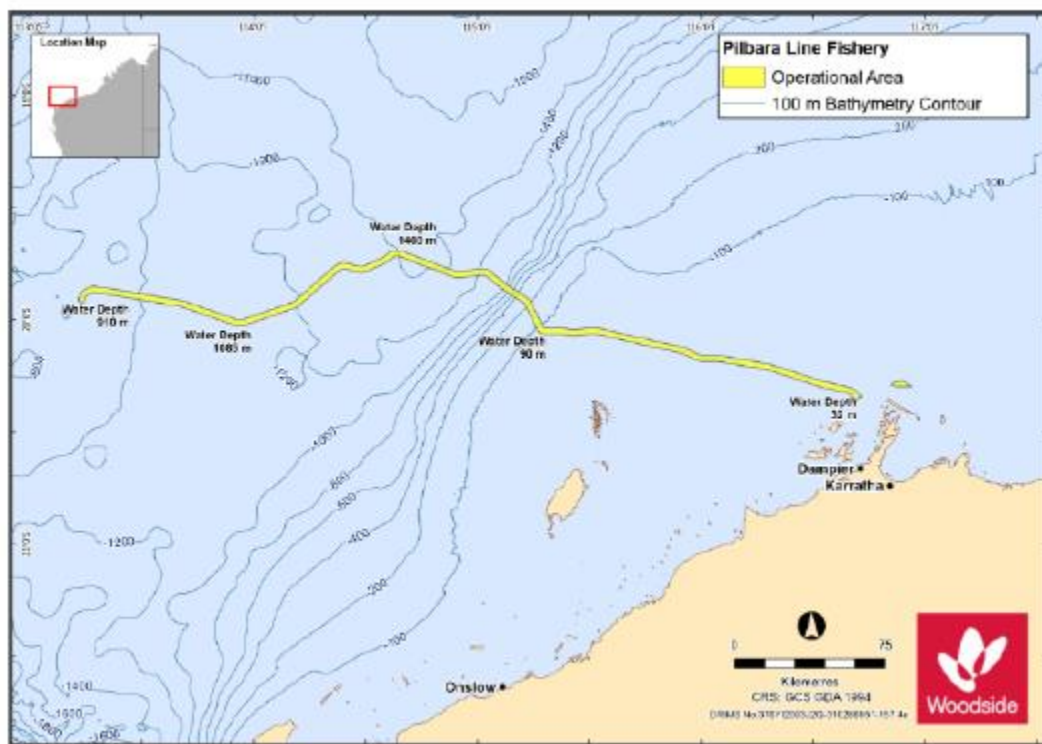




**Pilbara Trap Fishery**

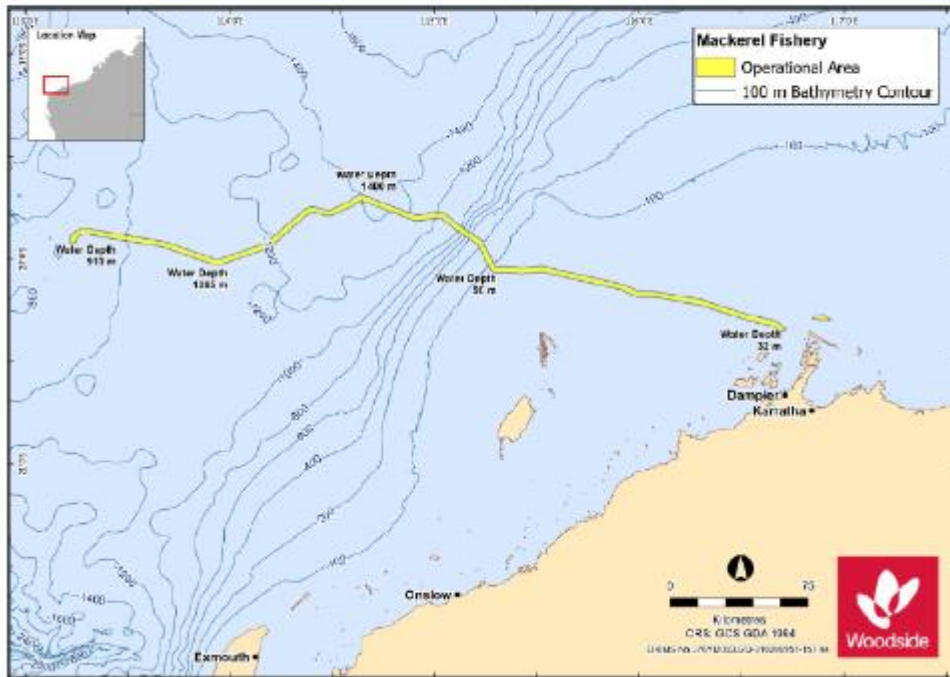


**Pilbara Line Fishery**



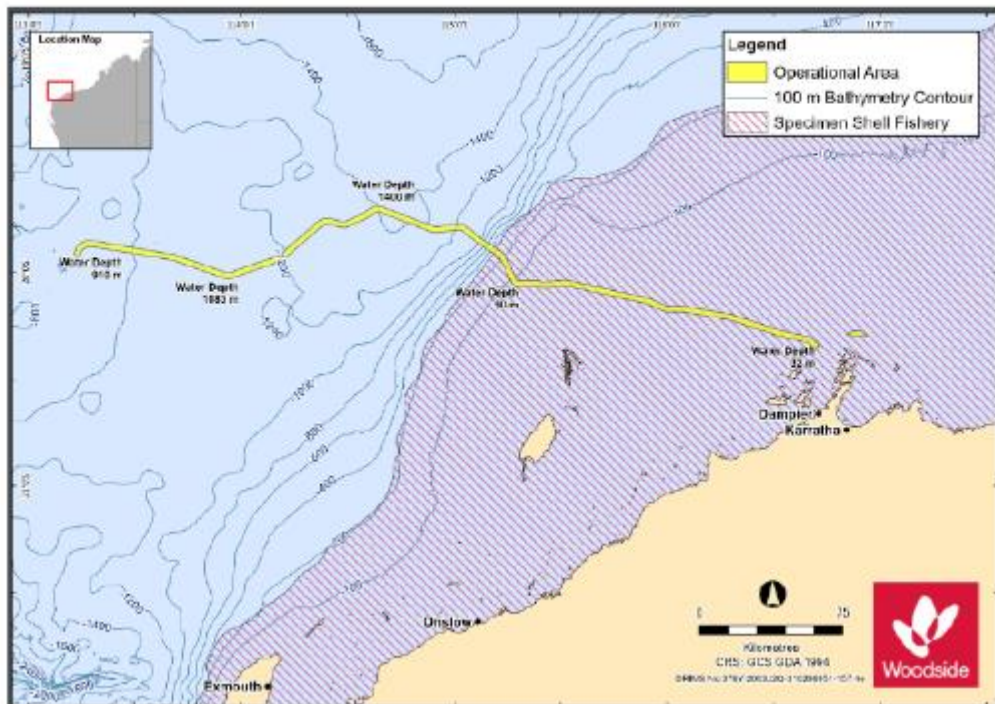
## 1.24 Map sent to licence holders (Mackerel Areas 2 and 3) (1 September 2021)

### Mackerel Managed Fishery (Areas 2 and 3)



## 1.25 Map sent to licence holders (Specimen Shell) (1 September 2021)

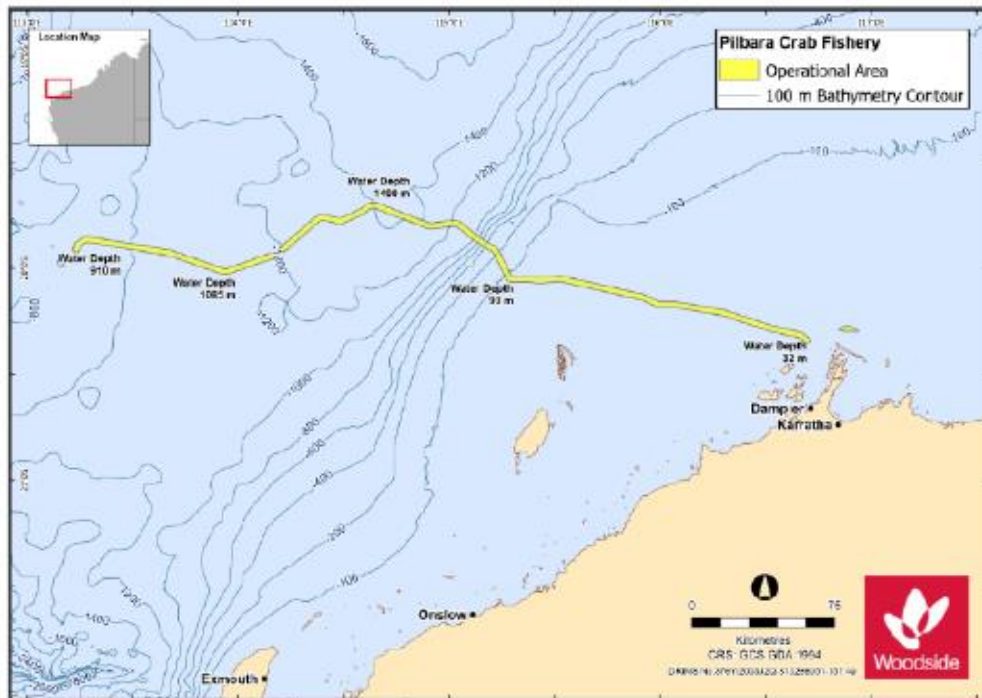
### Specimen Shell Fishery





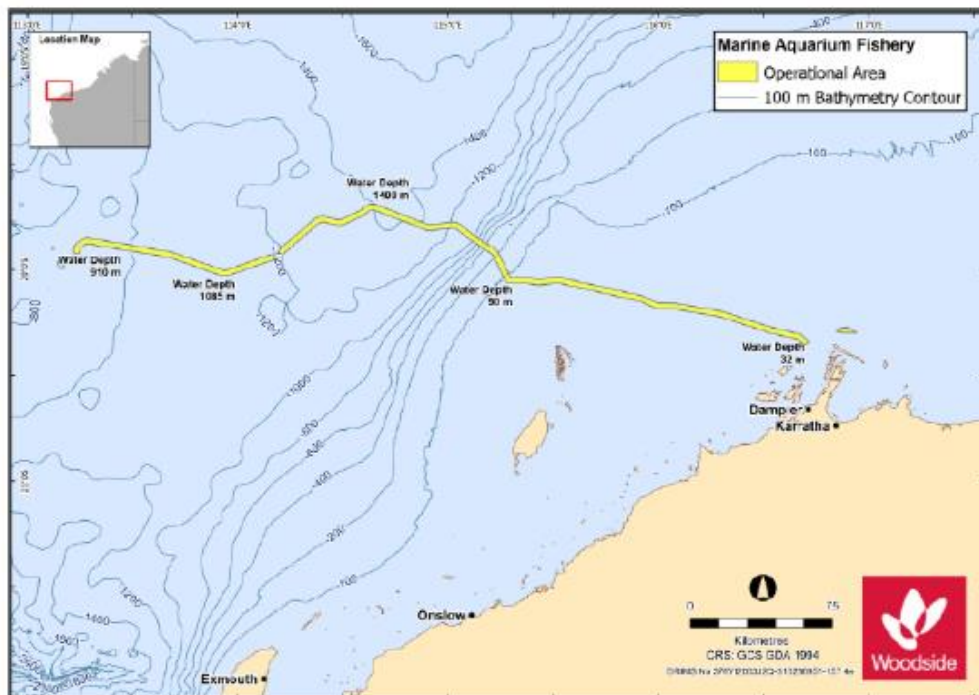
### 1.26 Map sent to licence holders (Pilbara Crab) (1 September 2021)

#### Pilbara Crab Fishery



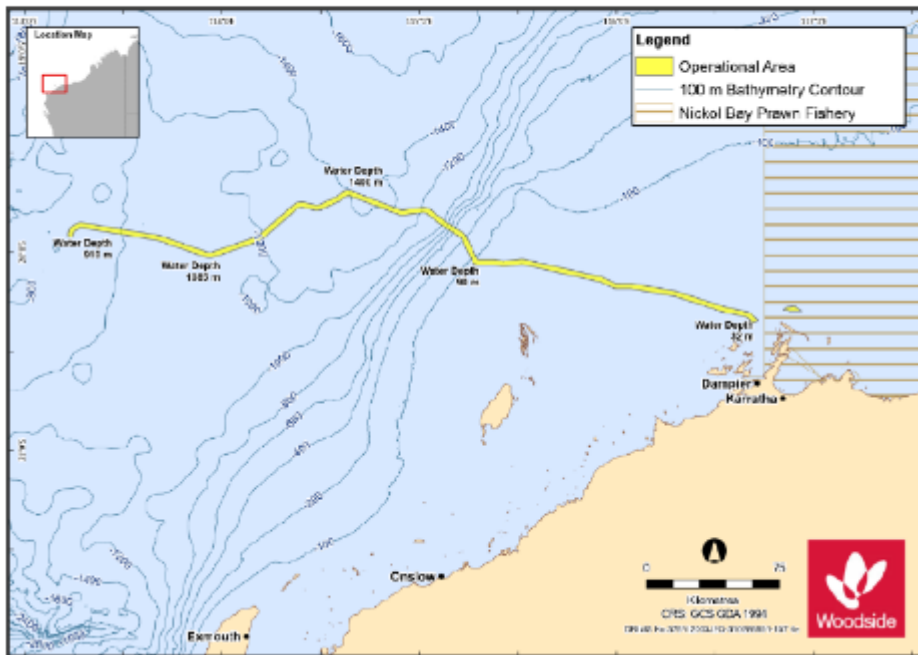
### 1.27 Map sent to licence holders (Marine Aquarium) (1 September 2021)

#### Marine Aquarium Managed Fishery



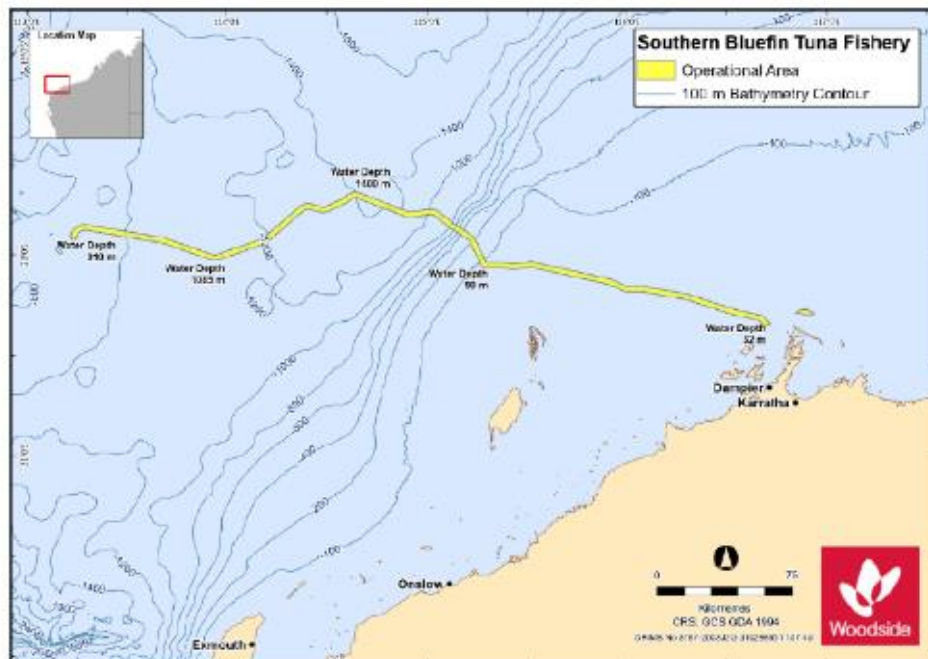
## 1.28 Map sent to licence holders (Nickol Bay Prawn) (1 September 2021)

### Nickol Bay Prawn Managed Fishery



## 1.29 Map sent to licence holders (Southern Bluefin Tuna) (1 September 2021)

### Southern Bluefin Tuna Fishery



## **2 CONSULTATION (2023)**

### **2.1 Updated Consultation Information Sheet (January 2023)**



STAKEHOLDER CONSULTATION

# INFORMATION SHEET

January 2023

## SCARBOROUGH SEABED INTERVENTION AND TRUNKLINE INSTALLATION

### CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside is planning to undertake seabed intervention and Trunkline Installation activities in Commonwealth waters for the proposed Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline (Trunkline) that runs approximately 450 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. The scope of this Environment Plan (EP) covers seabed intervention and installation activities for the section of the Trunkline in Commonwealth waters from the State waters boundary to the Pipeline End Termination (PET) in WA-61-L. A separate EP is

planned to address seabed intervention and Trunkline installation activities in State waters, for approval by the Western Australian Department of Mines, Industry Regulation and Safety.

Subject to relevant approvals and other constraints such as vessel availability and weather, seabed intervention activities are expected to start in mid 2023. Trunkline installation activities in Commonwealth waters are expected to commence in late 2023 following successful completion of the State waters installation scope. The Petroleum Activities Program is expected to take around 24 months to execute with activities occurring in multiple campaigns.

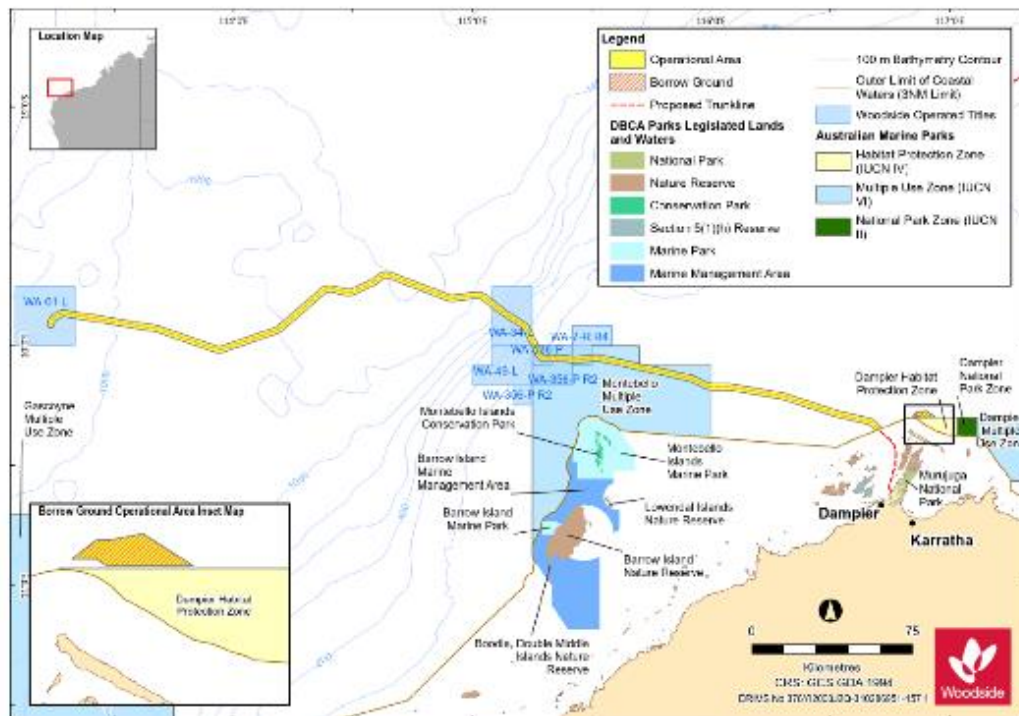


Figure 1. Proposed Scarborough Seabed Intervention and Trunkline Installation Operational Area

1 Scarborough Seabed Intervention and Trunkline Installation



**Proposed activity**

**Table 1 – Activity summary and project vessels**

Item	Details
<b>Location</b>	<ul style="list-style-type: none"> <li>• Carnarvon Basin, North-West Australia</li> </ul>
<b>Water depth</b>	<ul style="list-style-type: none"> <li>• Approximately 32 m (Trunkline route of State waters boundary) to 1400 m (deepest point approximately 275 km along the Trunkline route)</li> </ul>
<b>Earliest commencement date</b>	<ul style="list-style-type: none"> <li>• Seabed intervention activities: mid 2023 pending approvals, vessel availability and weather constraints</li> <li>• Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints</li> </ul>
<b>Estimated duration</b>	<ul style="list-style-type: none"> <li>• Approximately 24 months across multiple campaigns</li> </ul>
<b>Distance from Operational Area to nearest port/marina</b>	<ul style="list-style-type: none"> <li>• Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits</li> </ul>
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwith), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Seabed Intervention</b>	
<b>Key Vessels</b>	<ul style="list-style-type: none"> <li>• Trailing suction hopper dredge (TSHD)</li> <li>• Offshore construction vessel (OCV)</li> <li>• Rock Installation Vessel (RIV)</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul>
<b>Key Activities</b>	<ul style="list-style-type: none"> <li>• Surveys:                             <ul style="list-style-type: none"> <li>• Geophysical (including hydrographic surveys)</li> <li>• Geotechnical</li> <li>• Pre-lay survey before pipelay (visual and multibeam echo sounder)</li> </ul> </li> <li>• Trenching along the Trunkline route and material disposal at existing Spoil Ground 5A</li> <li>• Borrow ground dredging and backfill along the Trunkline</li> <li>• Continental slope crossing seabed preparation</li> <li>• Trunkline and infrastructure crossing supports installation, using rock and mattresses</li> <li>• Trunkline pre and post lay span rectification</li> <li>• Contingent seabed intervention activities including maintenance, dredging/excavation of resettled material in the trench prior to pipelay, post lay dredging, gravel bags and rock placement</li> </ul>
<b>Trunkline Installation</b>	
<b>Key Vessels</b>	<ul style="list-style-type: none"> <li>• Pipelay Vessel (PV) multi-joint operation</li> <li>• Shallow Water Lay Barge (SWLB)</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel (OCV)</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>
<b>Key activities</b>	<ul style="list-style-type: none"> <li>• Surveys:                             <ul style="list-style-type: none"> <li>• Pre-lay survey of the trunkline route prior to commencement of pipelay (visual and multibeam echo sounder)</li> <li>• Post-lay as built survey of the completed trunkline (visual and multibeam echo sounder)</li> </ul> </li> <li>• Installation of the Trunkline by a SWLB in the shallow water section of the route where the DP pipelay vessel may not be able to access due to water depth restrictions</li> <li>• Setting of SWLB anchors with anchor handling vessel/tug</li> <li>• Installation of the Trunkline by the PV, including over other operator pipelines</li> <li>• Installation of PLEI and in-line tee assembly, hot tap tee assembly and ancillary structures as required through design by the PV</li> <li>• Continuous delivery of pipe to the SWLB and PV by pipe supply vessels</li> <li>• Installation of the foundations for the PLEI structure by a construction vessel prior to the installation of the PLET</li> <li>• Dry pre-commissioning of the trunkline by a construction vessel</li> <li>• Contingent activities including wet buckle recovery and Flood, Clean, Gauge, Testing</li> </ul>

2 Scarborough Seabed Intervention and Trunkline Installation

### Proposed locations

The Operational Area includes the following Project Areas:

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels (includes Spoil Ground 5A which is included in the Trunkline operational area).
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced to assist with Trunkline stabilisation).

Within Commonwealth waters, the Scarborough Trunkline will extend from the FPU towards the existing Pluto offshore platform and infrastructure, approximately 200 km offshore north-west of the Burrup. The Scarborough Trunkline will then deviate to the south to avoid the existing facilities and minimise environmental, technical and safety risks. From approximately 20 km south-east of the Pluto platform, the Trunkline will be routed alongside the Pluto Trunkline until it reaches Mermaid Sound.

Sand may be required to assist with stabilisation along a ~20 km section of the Scarborough Trunkline from the State waters boundary. This sand is proposed to be obtained from the Offshore Borrow Ground Project Area in Commonwealth waters, as shown in Figure 1. The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park. A minimum 250 m buffer will be in place from the Marine Park boundaries.

### Communications with mariners

Safety exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

### Implications for stakeholders

Woodside will consult relevant stakeholders whose interests, functions, and activities may be affected by the proposed activities. We will also keep informed other stakeholders who have an identified interest in the planned activities. Woodside has undertaken an assessment to identify potential risks to the marine environment and relevant stakeholders, considering timing, duration, location and potential impacts arising from the construction and installation activities. This EIP approval falls under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and the activities will be conducted in line with relevant requirements of the OPP. A number of mitigation and management measures will be implemented and are summarised in Table 2. These measures will continue to be developed in conjunction with the CR, including impact assessments and controls to reduce impacts to an ALARP and acceptable level. Further details will be provided in the CR.

### About Scarborough

The Scarborough gas resource is located offshore, approximately 375 km west-northwest of the Burrup Peninsula and is part of the Greater Scarborough gas fields which are estimated to hold 15.0 tcf (20, 100%) of dry gas.

Woodside, as operator of the Scarborough Joint Venture, is proposing to develop the Scarborough gas resource through new offshore facilities connected by an approximately 430 km pipeline to a proposed expansion of the existing Pluto LNG onshore facility (Pluto Train 2).

For more information about the proposed Scarborough development, visit [woodside.com.au](http://woodside.com.au).

### Environment That May Be Affected (EMBA)

The environment that may be affected (EMBA) is the largest spatial extent where the Scarborough Seabed Intervention and Trunkline 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 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.

The three hydrocarbon spill modelling sites are representative of the range of locations where vessel collision could occur in the Operational Area and are summarised below. The EMBA has been defined using a combination of all three locations:

- **Outside Mermaid Sound (Location 1):** Near the State Waters Boundary, this site represents the closest location to shore activities that will occur under this EP.
- **Montebello Marine Park Multiple Use Zone (Location 2):** This location was chosen to represent worst-case potential impact potential to sensitive environmental receptors and is almost half-way along the trunkline length.
- **Scarborough Field (Location 3):** This location is representative of a spill in the deep-water open-ocean environment in permit area WA-61-L, close to the pipeline and termination (PI FT) and activities at the most western end of the Operational Area.

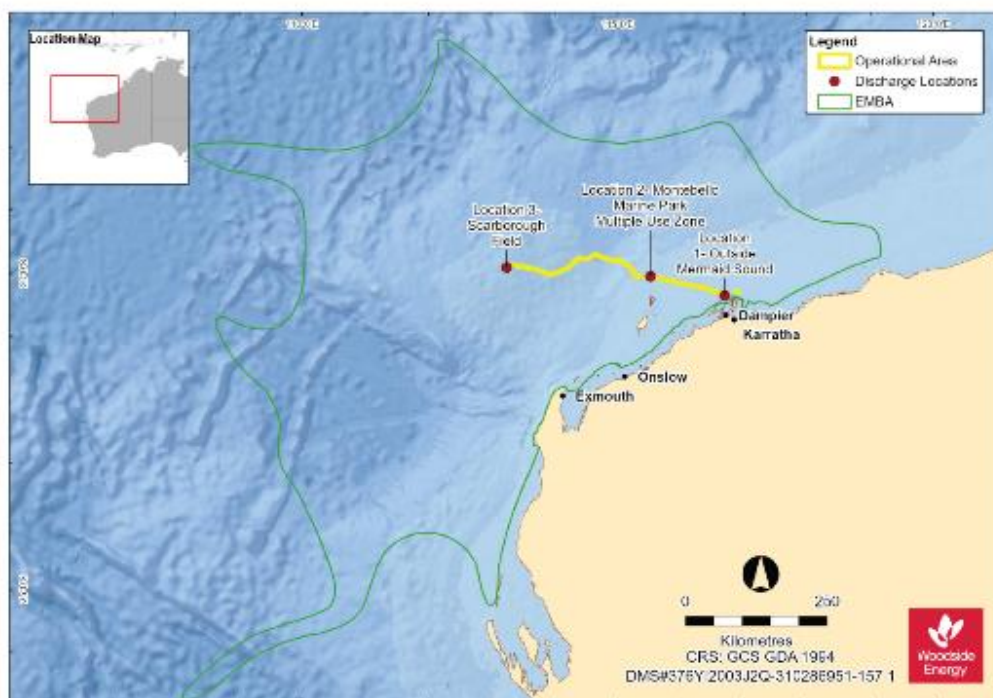


Figure 2. Environment that May Be Affected by the Scarborough Seabed Intervention and Trunkline Installation Activity

### Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the Scarborough Seabed Intervention and Trunkline Installation Activity.

A number of mitigation and management measures for the Scarborough Seabed Intervention and Trunkline Installation Activity are outlined in Table 2.



Table 2 - Summary of key risks and/or impacts and preliminary management measures for the Scarborough Seabed Intervention and Trunkline Installation Activity

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures <sup>1</sup>
<b>Planned</b>			
<b>Physical presence and interactions with other marine users</b>	<ul style="list-style-type: none"> <li>Several vessel types will be required to complete the activity, including a Trailing Suction Hopper Dredge (TSHD), Rock Installation Vessel (RIV), Pilelay Vessel (PV), Offshore Construction Vessel (OSV) and other support and survey vessels. Vessels will not usually anchor within the Operational Area.</li> <li>The physical presence and movement of project vessels within the Operational Area has the potential to displace other marine users.</li> <li>Vessels will typically be moving continually. PV will move at a rate of around 3 km per day.</li> <li>Helicopters will be used to transport personnel. Transport will occur on a regular basis, potentially with multiple flights per day for larger vessels such as the PV, and up to six days a week.</li> <li>The activity may not be executed as a single campaign or in a consecutive sequence.</li> </ul>	<ul style="list-style-type: none"> <li>Fishing vessels will not be excluded from the entire Operational Area for the total duration of the Scarborough Seabed Intervention and Trunkline Installation Activity. Displacement of fishing activities will be temporary and have no lasting effect.</li> <li>Impact to commercial shipping is limited to the temporary presence of activity vessels. Several Australian Maritime Safety Authority (AMSA) marine fairways intersect with the Operational Area. The presence of vessels and exclusion zones around them, will be limited to specific areas of the Operational Area at any one time, therefore resulting in a minor interference and localised displacement/avoidance by shipping.</li> <li>Potential impacts to tourism and recreational activities would likely be a minor interference (i.e. navigational hazard) and temporary, localised displacement/avoidance.</li> <li>Several oil and gas facilities are located in proximity to the Operational Area. Activities associated with the physical presence of vessels may result in localised, short-term interference to industry vessels requiring minor course alteration or readjustment in asset management.</li> </ul>	<ul style="list-style-type: none"> <li>Vessels adhere to regulatory requirements for navigational safety.</li> <li>Establish temporary 500 m exclusion zones around applicable vessels which are communicated to marine users.</li> <li>Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and upon completion of activities.</li> <li>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.</li> <li>Consult with relevant persons so that they are informed of the proposed activities.</li> </ul>

<sup>1</sup> This EP is currently under assessment – these mitigation and management measures are subject to change through the consultation and 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 <sup>1</sup>
<p><b>Physical presence – seabed disturbance (trenching, spoil disposal, borrow ground dredging and trunkline backfill)</b></p>	<ul style="list-style-type: none"> <li>To help stabilise the trunkline, seabed trenching and sand backfill over the trunkline will occur no further than 50 km offshore.</li> <li>Spoil from trenching will be placed in an existing spoil ground, consistent with a Sea Dumping Permit (S02019/39952).</li> <li>Sand for trunkline backfill will be sourced from an offshore borrow ground area with dredging and backfill activities being carried out by a TSHD.</li> </ul>	<ul style="list-style-type: none"> <li>Seabed disturbance has the potential to result in change in habitat, water quality and sediment quality, which may in turn affect fauna. Water quality change occurs when seabed sediments erode the water column (turbidity). Turbidity may occur during an activity which requires contact with, or occurs in proximity to, the seabed. After a period, the suspended sediments settle and the turbidity in the water column returns to pre-disturbance levels.</li> <li>The mobilisation of sediments along the trunkline during trenching and installation, and during borrow ground dredging activities may alter the seabed habitats over which the activities occur, resulting in community changes. Given the habitats likely to be present along the trunkline and within the borrow ground area, and the temporary nature of the elevations in turbidity, the potential impacts from seabed disturbance on epifauna and infauna is considered to be slight.</li> <li>Sediment dispersion modelling has indicated indirect impacts to coral habitat of the Dampier Archipelago are not predicted from seabed intervention activities in Commonwealth waters.</li> <li>Seabed disturbance is not expected to impact adversely on biologically important behaviours or biologically important habitat of marine turtles, including habitat critical to survival. Displacement of individuals from areas utilised as foraging habitat will not result in significant impacts at a population level.</li> <li>The project area has been subject to ethnographic surveys, which have found no cultural heritage values that will be affected by the development.</li> <li>Sediment dispersion modelling has indicated that detectable water quality changes are not predicted within the National Park Zone (I) of the Dampier Australian Marine Park (AMP).</li> </ul>	<ul style="list-style-type: none"> <li>Comply with Sea Dumping Permit so that dredged material isn't placed outside approved spoil ground and bathymetric survey of the disposal sites is undertaken as required.</li> <li>Implement the water quality monitoring program and Tiered Monitoring and Management Framework to manage water quality associated with Commonwealth dredging, spoil disposal and backfill activities to avoid reversible impacts to coral communities as the most sensitive receptor in Mermaid Sound and sponges in the offshore waters.</li> <li>Implement 250 m buffer zone between the offshore borrow ground and the Dampier Australian Marine Park (AMP).</li> <li>TSHD draghead will be positioned within approved footprints prior to and during trenching, borrow ground dredging and backfill activities.</li> <li>TSHD controls in place to minimise to sediment loss from the dredge.</li> </ul>

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures <sup>1</sup>
<b>Physical presence - seabed disturbance (Intervention and Trunkline Installation)</b>	<ul style="list-style-type: none"> <li>Seabed disturbance may result from:                             <ul style="list-style-type: none"> <li>Trunkline and ancillary structure(s) installation,</li> <li>Pipeline and infrastructure crossings; and</li> <li>Other intervention works such as continental slope excavation, PLCT and foundation installation and Remotely Operated Vehicle (ROV)/survey activities.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Seabed disturbance has the potential to result in change in habitat, water quality and sediment quality, which may in turn affect fauna. However, impacts from seabed disturbance will be highly localised and temporary in nature.</li> <li>The mobilisation of sediments along the trunkline during installation, and placement of infrastructure may alter the seabed habitats over which the activities occur, resulting in epifauna and infauna community changes. The potential impacts from seabed disturbance on epifauna and infauna is considered to be slight based on the localised footprint of disturbance and temporary nature of the elevations in turbidity.</li> <li>It is unlikely interesting turtles will occur in the Trunkline Project Area near the Montebello Islands, and seabed disturbance adjacent to the Dampier Archipelago is not expected to impact adversely on biologically important behaviours or biologically important habitat, including habitat critical to the survival of marine turtles.</li> <li>The project area has been subject to ethnographic surveys which have found no cultural heritage values will be affected by the development.</li> <li>Impacts from seabed disturbance within the Montebello Australian Marine Park (AMP) are considered to be minor and are not inconsistent with the objectives of the North-West Marine Parks Network Management Plan or the zoning of the Montebello AMP.</li> <li>Impacts to Key Ecological Features (KEFs) are considered to be minor as the disturbance will occur in a small proportion of each of the KEFs and avoids important or substantial areas of habitat, including hard substrates of the Ancient Coastline at 125 m Depth Contour KEF.</li> </ul>	<ul style="list-style-type: none"> <li>Infrastructure will be placed on the seabed within the predefined design footprint using positioning technology to limit seabed disturbance.</li> <li>Design for the continental slope crossing is engineered to minimise seabed excavation.</li> <li>Excavated material for the continental slope crossing will be placed in designated areas near the trench to limit seabed disturbance.</li> <li>If rock placement test dumps are required, they will be conducted within the indicative 50 m trunkline corridor to limit the seabed disturbance.</li> <li>No planned temporary placement of equipment on the seabed will occur within the Montebello AMP.</li> <li>Additional analysis of seabed mapping data of the outer shelf area to identify archaeological values, and conduct significance, impact and mitigation assessments required for new values identified.</li> </ul>

<sup>1</sup> Scarborough Seabed Intervention and Trunkline Installation

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures*
<b>Light emissions</b>	<ul style="list-style-type: none"> <li>Project vessels will use external lighting to navigate and conduct safe operations at night.</li> <li>Vessel lighting will also be used to communicate vessels' presence to other marine users (i.e. navigation/warning lights).</li> <li>The activity may 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 OP.</li> <li>Once the activities are completed, no permanent ongoing project lighting will occur in these localities.</li> </ul>	<ul style="list-style-type: none"> <li>Light emissions can affect fauna (such as marine turtles and birds) in two main ways:                             <ol style="list-style-type: none"> <li>Behaviour: artificial lighting has the potential to create a constant level of light at night that can override natural levels and cycles.</li> <li>Orientalion: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation.</li> </ol> </li> <li>Light emissions from project vessels are unlikely to result in more than localised, behavioural disturbance to isolated transient marine turtle individuals, with no lasting effect to the species.</li> <li>The distance between turtle nesting beaches and the Operational Area at the closest point (6.6 km to Legendre Island and &gt;10 km to closest nesting beach on Legendre Island and 14 km to Rosemary Island) are greater than the zone where behavioural impacts from vessel lighting are possible. Therefore, impacts to nesting female turtles, including discouraging females from nesting, or affecting nest site selection and site-finding behaviour, are not predicted, and females are not expected to be displaced from nesting habitat.</li> <li>Potential impacts to seabirds and migratory shorebirds are expected to be localised within the vicinity of vessels. It is highly unlikely adult nocturnal seabird foraging will be disturbed given the localised light emissions from activity vessels. Diurnal lighting impacts to diurnal seabirds on the islands of the Dampier Archipelago are not expected based on the maximum extent of lighting emissions from the modeling and behaviour of diurnal seabirds as they roost on islands and mainland habitat from dusk to dawn.</li> <li>For activities occurring within the Montebello Marine Park, and adjacent to the Dampier Marine Park, the short-term and transient nature of activities associated with vessel light emissions will not be inconsistent with the objectives of the management plan for the North-West Marine Park Network.</li> </ul>	<ul style="list-style-type: none"> <li>Lighting will be limited to the minimum required for navigation and safety requirements except in emergency circumal areas.</li> <li>Implement the Woodside Seabird Management Plan.</li> <li>Relevant crew will be trained in light reduction measures when operating within 20 km of Islands between December and April.</li> <li>Crew transfers which require direction of floodlights outside the vessel will preferentially occur during daylight hours, when vessels are within 20 km of Islands between December and April.</li> </ul>
<b>Atmospheric emissions and greenhouse gas (GHG) emissions</b>	<ul style="list-style-type: none"> <li>Atmospheric Emissions and Greenhouse Gas (GHG) Emissions</li> </ul>	<ul style="list-style-type: none"> <li>Emissions from project vessels could result in temporary, localised reductions in air quality in the immediate vicinity of the vessels.</li> <li>Although the Offshore Borrow Ground Project Area and part of the Trunkline Project Area are located closer to the shore, they remain in open ocean and well-removed from nearest residential or sensitive populations of the Western Australian coast. Given the short duration and exposed location of project vessels, low volumes of atmospheric emissions will be dispersed rapidly, therefore biodiversity, ecological integrity, social amenities and human health will not be impacted.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Comply with regulatory requirements for marine air pollution and GHG emissions reporting.</li> <li>Vessel operations planned, where practicable, to minimise fuel consumption and associated GHG/air emissions.</li> <li>Fuel types will be selected to reduce expected GHG emissions. Project vessels will not use heavy fuel oil (HFO) or intermediate fuel oil (IFO).</li> <li>Contractors engaged on energy/GHG emissions efficiencies and opportunities identified and implemented where reasonably practicable.</li> <li>Track and review GHG emissions during the activity with the objective to identify further opportunities to improve efficiencies.</li> </ul>

8 Scarborough Seabed Intervention and Trunkline Installation

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures <sup>1</sup>
<p><b>Routine acoustic omissions</b></p>	<ul style="list-style-type: none"> <li>Project vessels will generate noise in the air and underwater due to the operation of thruster engines, propellers, and on-board machinery etc.</li> <li>Underwater noise may also be generated by geophysical sources during surveys, positioning equipment (transponders), Dynamic Positioning (DP) systems on vessels, and helicopters.</li> </ul>	<ul style="list-style-type: none"> <li>Elevated underwater noise can affect marine fauna, including marine mammals, turtles and fish in three main ways:                         <ol style="list-style-type: none"> <li>By causing direct physical effects, including injury or hearing impairment. Hearing impairment may be temporary or permanent.</li> <li>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.</li> <li>By masking or interfering with other biologically important sounds (including vocal communication, ad locution, signals and sounds produced by predators or prey).</li> </ol> </li> <li>It is not credible that permanent and temporary thresholds would be exceeded for pygmy blue whales transiting through the Operational Area during migration seasons.</li> <li>Vessel related activities occurring within the migration Biologically Important Areas (BIAs) during migration seasons for pygmy blue whales and humpback whales, may result in a behavioral response from individuals or groups of whales transiting in proximity to vessels.</li> <li>Marine turtles within the Operational Area are expected to be transient and unlikely to remain within 150 m of the vessels for 24-hours, and therefore permanent and temporary thresholds are not expected to be reached. Behavioural impacts to marine turtles from continuous noise sources are expected to be short-term and localised.</li> <li>Potential impacts from acoustic emissions on fish, sharks and rays are likely to be restricted to localised and temporary avoidance behaviour, and individuals impacted are unlikely to represent a significant proportion of the population within the Operational Area and the region overall.</li> </ul>	<ul style="list-style-type: none"> <li>Comply with regulatory requirements for interactions with marine megafauna to prevent adverse interactions.</li> <li>The use of trained vessel crew to carry out observations for marine megafauna on relevant primary installation vessels.</li> <li>Limit the number of pipe supply vessels using DP alongside the pipelay vessel during certain times of the year and at certain locations, based on the likelihood of pygmy blue whale encounter.</li> <li>Manage vessel speed in the humpback whale and pygmy blue whale BIAs during migratory seasons within the Operational Area to minimise vessel noise.</li> <li>Periodic inspection and/or maintenance to ensure optimal performance to minimise extraneous noise emissions of critical equipment onboard relevant primary installation vessels.</li> </ul>

<sup>1</sup> Scarborough Seabed Intervention and Trunkline Installation



Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures <sup>1</sup>
<b>Routine and non-routine discharges - project vessels and seabed intervention</b>	<ul style="list-style-type: none"> <li>Sewage, greywater and macerated food waste will be discharged from project vessels.</li> <li>Blige water, deck drainage and brine and cooling water may also be discharged.</li> <li>Cement and grout from seabed intervention activities may be discharged.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Impacts on water quality will have no lasting effect due to the transient nature of vessels, high level of dilution with little continuous discharge in a stationary location.</li> <li>Cement discharges can result in turbidity in the water column. Reduction in water quality will be temporary (limited to the cement operational discharges) and due to small volumes are likely to be subject to rapid dispersion and dilution by prevailing currents.</li> <li>It is possible marine fauna transiting the localised area may come in contact with vessel discharges. While the likely presence of marine fauna varies at different times of the year depending on migration, foraging and breeding patterns in the region, the potential for impact remains low due to the localised nature of discharges and rapid dilution.</li> <li>Planktonic productivity in the North-West Marine Region 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. Impacts to plankton from greywater, sewerage or brine and cooling water discharges are not expected.</li> </ul>	<ul style="list-style-type: none"> <li>Marine discharges will be managed according to regulatory requirements.</li> <li>Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.</li> <li>Project vessels (excluding PV) operating in the Montebello Marine Park will avoid making vessel discharges of sewage, greywater and food waste, until outside the Montebello Marine Park Multiple Use Zone, unless vessel safety is compromised.</li> </ul>
<b>Unplanned</b>			
<b>Unplanned hydrocarbon release – vessel collision</b>	<ul style="list-style-type: none"> <li>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.</li> <li>For a collision to result in the worst-case scenario diesel release, several factors must occur as follows: <ul style="list-style-type: none"> <li>Identified causes of vessel interaction must result in a collision.</li> <li>The collision has enough force to penetrate the vessel hull and in the exact location of the fuel tank.</li> <li>The fuel tank must be full or at least of volume which is higher than the point of penetration.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Marine diesel is a relatively volatile, non-persistent nature hydrocarbon with up to 35% evaporating within the first 24 hours.</li> <li>Potential impacts across the DMBA were assessed including receptors such as plankton, mangroves, seabirds and migratory shorebirds, salt marshes, coral, tourism, recreation and cultural heritage (for example).</li> <li>Taking into account receptor sensitivity, the highest consequence rating for this unplanned event was 'Major' for potential change in coral habitat. Other receptors were rated as having a potential consequence level of 'Minor' or less (Slight or Negligible).</li> </ul>	<p><b>Preventing vessel collision:</b></p> <ul style="list-style-type: none"> <li>Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.</li> <li>Consult with relevant persons so that other marine users are informed and aware, reducing the likelihood of a collision.</li> <li>Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and on completion of activities.</li> <li>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.</li> <li>Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision.</li> <li>Develop a management plan for simultaneous operations when working in vicinity of other Woodside operations/activities.</li> </ul> <p><b>Spill response arrangements:</b></p> <ul style="list-style-type: none"> <li>Develop a project specific Oil Pollution Emergency Preparation document (OPEP) including first strike response plan.</li> <li>Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested to ensure the OPEP can be implemented as planned.</li> <li>Emergency response activities would be implemented in line with the OPEP.</li> </ul>

<sup>10</sup> Scarborough Seabed Intervention and Trunkline Installation

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures <sup>1</sup>
<b>Unplanned hydrocarbon release - bunkering</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The marine diesel surface release is expected to be confined to within several kilometers of the release site, and well within the EMRA identified for the vessel collision scenario.</li> <li>An 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. Receptors were rated as having a potential consequence level of slight or negligible due to the low spill volume and characteristics of the fuel oil which is largely non-persistent.</li> </ul>	<ul style="list-style-type: none"> <li>Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.</li> <li>Appropriate bunkering equipment kept and maintained. Comply with contractor procedures for management of bunkering/refueling operations to reduce the likelihood of a spill occurring.</li> <li>Preference for PV to avoid refueling in the Montebello Marine Park Multiple Use Zone. No other project vessels to be refueled in this zone.</li> </ul> <p><b>Spill response arrangements:</b></p> <ul style="list-style-type: none"> <li>Maintain and locate spill kits in proximity to hydrocarbon storage and deck areas for use to contain and recover deck spills.</li> </ul> <p>Arrangements supporting the Oil Pollution Emergency Preparation document (OPEP) will be tested so that the OPEP can be implemented as planned.</p> <ul style="list-style-type: none"> <li>Emergency response activities would be implemented in line with the OPEP.</li> </ul>
<b>Unplanned discharge - deck and subsea spills</b>	<ul style="list-style-type: none"> <li>Accidental discharge of hydrocarbons/ chemicals from project vessels' deck activities and equipment, and from subsea ROV hydraulic leaks.</li> </ul>	<ul style="list-style-type: none"> <li>Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (&lt;50 L) are anticipated, resulting in very short-term impacts to water quality, and limited to the immediate release location.</li> <li>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 negligible.</li> </ul>	<ul style="list-style-type: none"> <li>Comply with regulatory requirements for the prevention of marine pollution.</li> <li>Liquid chemical and fuel storage areas are bundled or secondarily contained when they are not being handled/moved temporarily.</li> <li>Spill kits positioned in high-risk locations around the vessel (near potential spill points such as transfer stations).</li> <li>Implement waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of all waste generated.</li> <li>Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.</li> </ul>
<b>Unplanned discharge of solid hazardous, non-hazardous solid waste/ equipment</b>	<ul style="list-style-type: none"> <li>Accidental, unplanned loss of hazardous or non-hazardous solid wastes/equipment to the marine environment may occur if dropped or blown overboard.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes.</li> <li>Implement waste management procedures to enable the safe handling and transportation, segregation and storage and appropriate classification of waste generated.</li> <li>Solid waste/equipment dropped to the marine environment will be recovered where safe and practicable to do so.</li> </ul>

<sup>1</sup> Scarborough Seabed Intervention and Trunkline Installation



Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures <sup>1</sup>
<b>Unplanned seabed disturbance</b>	<ul style="list-style-type: none"> <li>Unplanned disturbance to seabed may occur if the activities in the Operational Area are carried out outside of the design footprint (i.e. trenching, spoil disposal and backfill activities outside designated areas or dredging outside of the Offshore Borrow Ground Project Area)</li> <li>Dropped objects may also result in unplanned disturbance of benthic habitat contingent activities such as trunkline abandonment and temporary mooring could also result in unplanned seabed disturbance.</li> </ul>	<ul style="list-style-type: none"> <li>Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities.</li> <li>Potential impacts to KCPs which intersect the Operational Area of the activity are limited to the footprint of a dropped object, resulting in potential highly localised and temporary change in habitat.</li> <li>The offshore borrow ground dredging will occur adjacent to the Dampier Marine Park. A planned 250 m buffer is in place. Should dredging occur outside the designated areas, it is not anticipated to be at a significant distance and impacts will remain within this buffer zone (i.e. seabed disturbance will not be within the Dampier Marine Park).</li> </ul>	<ul style="list-style-type: none"> <li>Comply with the Sea Dumping Permit, including disposing of dredged material in the designated disposal site.</li> <li>Designated 'No dredge' out of zone alarms will be installed and used on the dredging vessel navigation system.</li> <li>Implement 250 m buffer zone between the offshore borrow ground and the Dampier AMP.</li> <li>Infrastructure placed on the seabed within the predefined design footprint using positioning technology to limit seabed disturbance. The trunkline touchdown point monitored during operations so that the trunkline is installed correctly.</li> <li>All lifts, bulk transfers and cargo loading conducted in accordance with applicable vessels' work procedures to limit potential for dropped objects, with dropped object prevention awareness provided to vessel crew.</li> <li>Different rigging designs assessed to reduce likelihood of dropped pipe from issues such as sling slippage and will consider the use of spreader bars.</li> <li>Lifting activities between vessels to be carried out in accordance with requirements of third-party crossing agreement/permitting.</li> <li>Objects dropped to the marine environment to be recovered, where safe and practicable to do so.</li> </ul>
<b>Unplanned interaction with marine fauna</b>	<ul style="list-style-type: none"> <li>Vessel movements have the potential to result in collisions between the vessel (hull and propellers) and marine fauna.</li> <li>The factors contributing to the frequency and severity of impacts 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. This activity presents an unlikely risk of accidental entrainment of marine fauna from pre-lay trenching and dredging in offshore borrow ground area, and accidental smothering/burial of marine fauna from spoil disposal and backfill.</li> </ul>	<ul style="list-style-type: none"> <li>The risk of vessel collision with marine mammals is present year-round but is elevated seasonally for species such as humpback whales and pygmy blue whales during migration periods and within migration BIAs. Whilst a portion of the Operational Area overlaps the humpback whale migration BIA in the NWMR, this overlap represents a very small proportion of the overall area of the BIA (0.22%). Given this limited spatial overlap with the humpback whale migration BIA, the short duration of activities within the Operational Area, and the slow speeds at which project vessels operate (required to be 10 km or less), collisions with humpback whales are considered highly unlikely.</li> <li>It is expected marine turtles will respond to vessel presence by avoiding the immediate vicinity of the vessels, and combined with low vessel speed, this will reduce the likelihood of a vessel-turtle collision or entrainment during dredging activities. In addition, activities within sensitive turtle areas (BIAs and critical habitat) will be conducted over a period of months, further reducing the potential for impact at the individual and population level.</li> <li>It is expected whale shark presence within the Operational Area would not comprise significant numbers and their presence would be transitory and of short duration. Given the short duration of activities within the Operational Area and the slow speeds at which project vessels operate, vessel collisions with whale sharks are considered highly unlikely.</li> </ul>	<ul style="list-style-type: none"> <li>Comply with regulatory requirements for interactions with marine megafauna.</li> <li>Comply with Sea Dumping Permit to reduce the likelihood of interaction with marine megafauna during spoil disposal.</li> <li>Installation of turtle deflection chains in front of the dredge vessel drag head to reduce likelihood of entrainment.</li> <li>Use of trained vessel crew as Marine Fauna Observers on relevant vessels while operating in the pygmy blue whale migration BIA during migration periods.</li> <li>Management of vessel speed in the humpback and pygmy blue whale BIAs in migration seasons within the Operational Area (excluding Pillbara Port).</li> <li>During daylight hours, trained vessel crew onboard the dredge will visually assess marine megafauna and specified observation and exclusion zones will be adhered to during dredging and spoil disposal.</li> <li>Project vessels will not travel greater than 6 km within 100 m of a turtle (observation zone) and not approach closer than 50 m. If a turtle shows signs of disruption, project vessels will immediately withdraw from the observation zone at a constant speed of less than 6 km.</li> <li>At completion of dredge run (i.e. fill of hopper), stop dredge pumps as soon as practicable after the dredge drag head is lifted from the seafloor to reduce the likelihood of impact to turtles.</li> </ul>

<sup>12</sup> Scarborough Seabed Intervention and Trunkline Installation

Potential Impact/Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures <sup>1</sup>
<b>Accidental Introduction of invasive marine species (IMS)</b>	<ul style="list-style-type: none"> <li>Vessels for the activity may be transiting to and from the Operational Area from local ports (i.e. Damper), or from inshore or international waters.</li> <li>IMS could be present as biofouling on the vessel hull or on immersible equipment and could be translocated to the Operational Area and transferred directly to the seafloor or subsea structures where they could establish.</li> <li>Organisms can also be drawn into ballast tanks during onboarding of ballast water as cargo is loaded or to balance vessels under load.</li> </ul>	<ul style="list-style-type: none"> <li>The deeper offshore open waters of the Operational Area are not conducive to the settlement and establishment of IMS.</li> <li>The Trunkline Project Area and Offshore Borrow Ground Project Area in shallower waters (30 – 40 m) present a slightly increased risk of IMS establishment; however, IMS require hard substrate/features on the seabed to attach to, none of which is present within the Operational Area. Therefore, the risk of establishment, whilst credible, is remote.</li> <li>Given the low likelihood of IMS translocation to and colonisation within the Operational Area, project activities are unlikely to result in establishment of IMS, and as such will not adversely affect other marine user activities in the region.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment entering the Operational Area.</li> </ul>

**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](mailto: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](http://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.



## 2.1.1 Simplified Overview Information Sheet (January 2023)



# OVERVIEW INFORMATION SHEET

January 2023

STAKEHOLDER CONSULTATION

## 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 50 km 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 record.

You can find more information about Woodside on our website: [www.woodside.com](http://www.woodside.com)

**Scarborough Project**

Scarborough is a gas field under the sea floor about 575 km northwest of Karratha. Woodside plans to bring this gas from Scarborough to Muruga (The Burnup Peninsula) through a pipeline (called a trunkline) that is approximately 400 km long, to Woodside's Pluto gas plant.

The map below shows where the Scarborough project, including the trunkline, is located.



The map shows the Scarborough gas field located approximately 575 km northwest of Karratha. A pipeline (trunkline) is shown extending from the gas field to Muruga (The Burnup Peninsula) on the coast. The map also shows several coastal communities including Broome, Bidjadanga Community, Sandfire Roadhouse, Port Hedland, Marble Bar, Telfer, Newman, Paraburdoo, Tom Price, Pannawonica, Onslow, Exmouth, Coral Bay, and Carnarvon. A scale bar indicates 0 to 250 Kilometres (CRS: GCS GDA 1984). The Woodside Energy logo is in the bottom right corner.

You can find more information about the Scarborough project on Woodside's website: <https://www.woodside.com/what-we-do/growth-projects/scarborough>

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### 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 approvals are received. 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 Muruga (Surrup Peninsula). The pipeline is a trunkline, is approximately 470 kilometres long. This is called **Seabed Intervention and Trunkline Installation**.
2. A survey of what is underneath the seabed. These are called **Seismic Surveys**.

3. Drilling and installing the upper 2, 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 shore via Floating Production, Storage and Offloading (**FSO**). This is called **Subsea Infrastructure Installation**.

Information sheets for these work programs are available on our website:

<https://www.woodside.com/sustainability/consultation-activities>.

## 2.1.2 Bespoke Consultation Information Sheet (January 2023)



# SUMMARY INFORMATION SHEET

STAKEHOLDER CONSULTATION

January 2023

## SCARBOROUGH SEABED INTERVENTION AND TRUNKLINE INSTALLATION

This is a summary of the activity in plain English. More detailed information is included in the Scarborough Seabed Intervention and Trunkline Installation Information Sheet.

### Overview

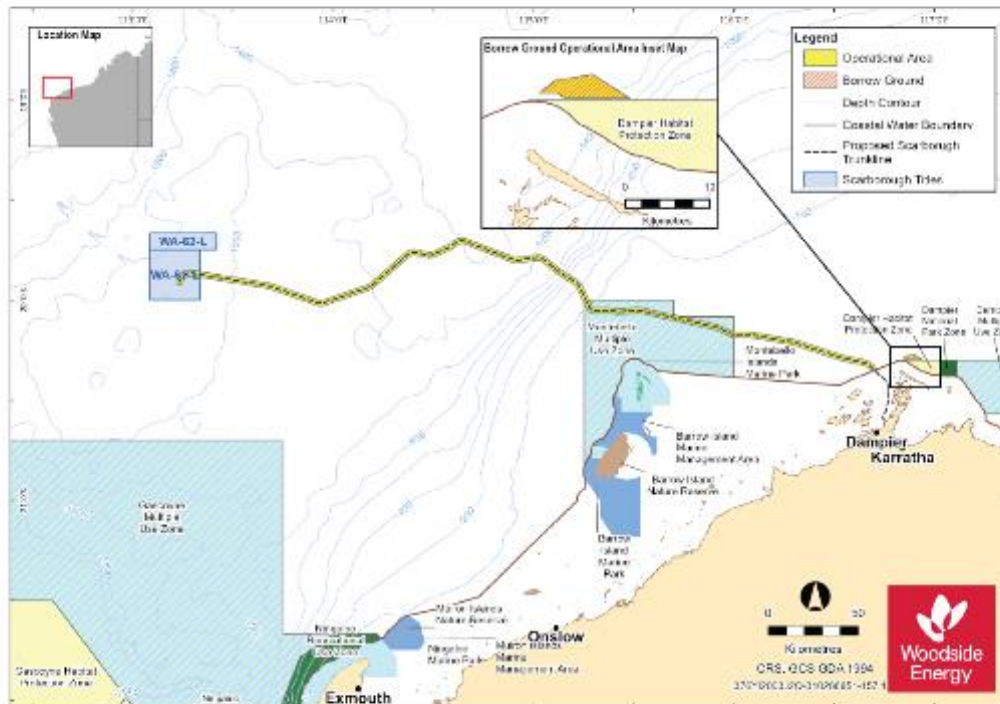
Woodside plans to install an approximately 430km long pipeline (called a trunkline) that will transport gas from the Scarborough gas field to the Pluto Gas Plant on Murujuga (Burrup Peninsula). The activity will be divided into the following parts:

- 1. Seabed Intervention** - involves preparing the seabed for pipe installation by placing rock for pipe and cable crossing, and clearing out sand, deposits, and debris.
- 2. Trunkline Installation** - involves laying down the pipeline on the seabed using vessels and a barge.

The trunkline is almost a metre wide and approximately 430km long, of which around 400km will be in Commonwealth Waters. Below is a map showing the location of the trunkline in Commonwealth Waters and Woodside's operational area for this work.

Woodside is planning to start the Seabed Intervention and Trunkline Installation work upon the acceptance of the Environment Plan, and the aim is to start work around mid-2023. The activity is expected to take up to around 2 years to complete.

A map showing the location of this work is below.



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**Work Method**

**Seabed Intervention** - To support the trunkline installation, seabed preparation is required at some locations along the trunkline route. In shallow Commonwealth waters a narrow trench, up to 20 km long, will be created using a dredge vessel. The trunkline will be laid in the trench, with sand then placed on top to stabilise it. The sand will come from the Offshore Scour Ground, located about 20 km to the east of the proposed trunkline route and near the Dampier Marine Park. Further offshore, other seabed preparation activities are planned at some locations along the trunkline route, such as the placement of rock for the trunkline to cross other pipelines and cables, and excavation and other methods to ensure the trunkline lies suitably on the seabed.

**Trunkline Installation** - Woodside will lay the trunkline down on the seabed using pipe lay ships, barges and support boats and install other pipe support structures. The activity will also include testing of the trunkline for potential leaks.

To support these activities, Woodside will also conduct surveys to monitor the activities. An overview of the seabed intervention and trunkline installation activity is shown in the illustration below.



Figure 1 Dredge creating a trench for trunkline to sit in



Figure 2 Placement of rock for pipe and cable crossings

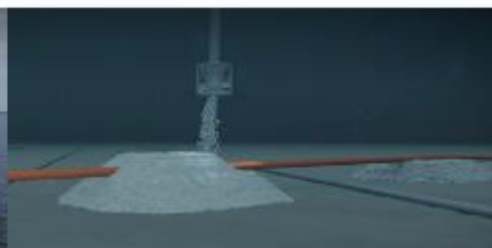


Figure 3 Laying of the trunkline by pipe-lay vessel



**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 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. Water testing of the trunkline may result in discharge of treated seawater. The dredging, sand backfill, pipeline installation and other intervention activities may also result in seabed disturbance.

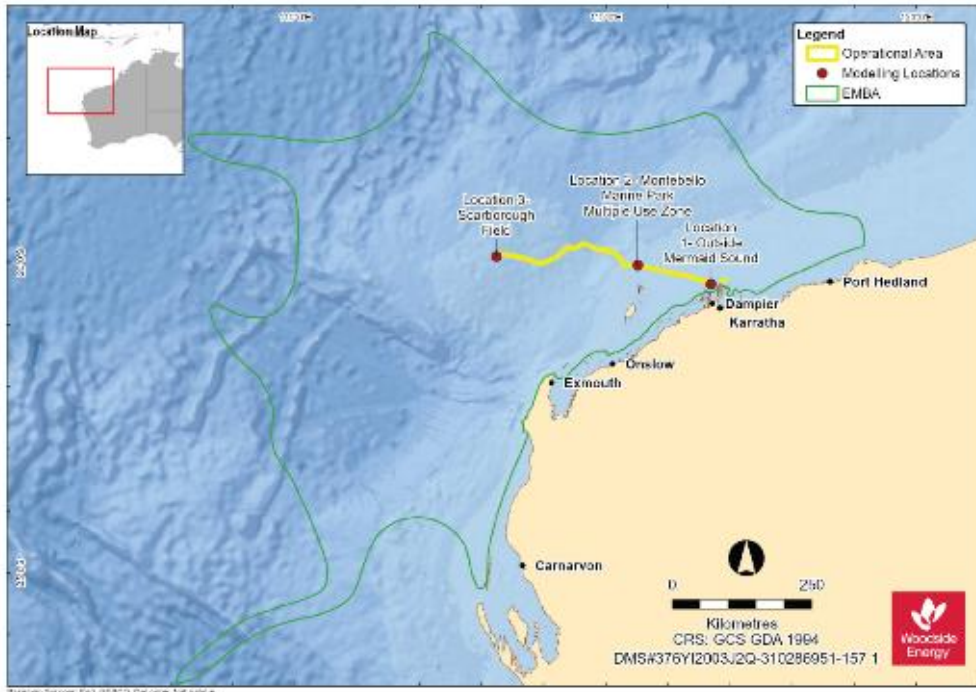
Unplanned Activities are not planned as part of the work program, but may be the result of an accident, incident, or emergency situation. It is highly unlikely that there will be an Unplanned Activity. Unplanned

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 2.

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 Seabed Intervention and Trunkline Installation activities 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.

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**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](mailto: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@npsma.gov.au](mailto:communications@npsma.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>.

**2.2 Email sent to The Wilderness Society (TWS) (30 September 2022)**

Dear Wilderness Society

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 Controlled Ref No: SA0006AH0000004 Revision: 6 Page 383 of 737  
 Uncontrolled when printed. Refer to electronic version for most up to date information.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that Wilderness Society has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

**Activity:**

**Summary:**

Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

**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 block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.

**Approx. Water Depth (m):**

~ 32 m – 1400 m

**Earliest commencement date:**

Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints

Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

**Estimated duration:**

Approximately 24 months across multiple campaigns

**Distance from Operational Area to nearest port/marina**

Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Feedback:**



If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, then please respond to Woodside at: [Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

### **Woodside Feedback**

#### **2.3 Email sent to Say No to Scarborough Gas – 30 September 2022**

Dear Say No to Scarborough Gas

Woodside has identified that Say No to Scarborough Gas has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that Say No to Scarborough Gas has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

Woodside has assessed your online public campaign and has provided detailed response at **Attachment A**.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

### Activity:

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<b>Operational Areas</b>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow</li></ul>

for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.

- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Feedback:**

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, then please respond to Woodside at:

[Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

**Woodside Feedback**

**Attachment A – Scarborough Seabed Intervention and Trunkline Installation – 30 September 2022**

Woodside has reviewed the Say no to Scarborough Gas online public campaign in relation to the activity defined in the Scarborough Seabed Intervention and Trunkline Installation Environment Plan, and notes that content generally relates to the themes outlined in the below table

Theme	Woodside response
Assessment of climate change from activity	<p>Concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (the SITI EP)</p> <p>Woodside confirms that the SITI EP assesses 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. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI 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 SITI EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the SITI activity (ie fuel combustion from project vessels) are considered in Section 6.8.5 (Revision 1) of the publicly available SITI EP.</p>
Trunkline installation through Montebello Multiple Use Zone	<p>The proposed activity will include works through the Montebello Marine Park Multiple Use Zone. In accordance with the North-west Marine Parks Network Management Plan, petroleum activities including transportation of minerals by pipeline, and oil spill response are permissible subject to approval in Multiple Use Zone (IUCN category VI) and Special Purpose Zone Trawl (IUCN category VI).</p> <p>Environmental Performance Outcomes (EPOs) from the Scarborough OPP relating to maintenance of the Montebello multiple use zone values have been cascaded to the SITI EP. Specifically the EPOs:</p> <ul style="list-style-type: none"> <li>• Undertake Scarborough Trunkline Installation within the Montebello AMP in a manner that will be not be inconsistent with the objective of the multiple use zone.</li> <li>• Changes to water quality in the Montebello Marine Park as a result of the trunkline installation will be not be inconsistent with the objective of the multiple use zone.</li> </ul> <p>Impact assessments in Section 6 of the SITI EP include impact potential to AMPs such as the Montebello Multiple Use Zone where applicable. Receptors such as dolphins, turtles, sharks, rays and sea snakes are also included in the impact assessments where relevant (i.e. 6.6.6 Routine Acoustic Emissions is relevant to reptiles, fish and bivalves; 6.7.7. Interaction with Marine Fauna is relevant to marine mammals, reptiles, fish, sharks and rays).</p> <p>Impact assessment shows that potential consequence for marine fauna across the risk factors is maximum 'D' (Ref Figure 2-2 in the EP) which is a Minor short-term impact, with the most common consequences being Slight short-term or no lasting effect. Potential for any mortality in marine fauna as a result of the PAP is unlikely, highly unlikely or remote.</p>
Rock art and Aboriginal cultural heritage	<p>Emissions from the activities covered by the SITI EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program (PAP). Woodside has undertaken archaeological assessments</p>

	<p>and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI EP.</p> <p>A summary of this work and its results are provided in Section 4.9.1 of the EP.</p> <p>No rock art will be displaced as a result of the proposed Petroleum Activities Program (PAP).</p>
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## 2.4 Email sent to Australasian Centre for Corporate Responsibility (ACCR) (30 September 2022)

Dear Australasian Centre for Corporate Responsibility

Woodside has identified that Australasian Centre for Corporate Responsibility (ACCR) has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that ACCR has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

Woodside has reviewed your online public campaign in relation to the activity defined in the Scarborough Seabed Intervention and Trunkline Installation Environment Plan, and notes that content generally relates to impacts and risks of the Scarborough Project to climate change and greenhouse gas (GHG) emissions.

We confirm that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (the SITI EP).

Woodside confirms that the SITI EP assesses 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. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI 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 SITI EP but may be evaluated in Scarborough EPs as appropriate.

GHG emissions associated with the SITI activity (ie fuel combustion from project vessels) are considered in Section 6.6.5 (Revision 1) of the publicly available SITI EP.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

**Activity:**

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns



**Distance from Operational Area to nearest port/marina**

Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Feedback:**

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, then please respond to Woodside at:

[Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

## Woodside Feedback

### 2.5 Email sent to Sea Shepherd Australia (SSA) (30 September 2022)

Dear Sea Shepherd Australia

Woodside has identified that Sea Shepherd Australia has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that Sea Shepherd Australia has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

Woodside has assessed your online public campaign and has provided detailed response at **Attachment A**.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.



Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

**Activity:**

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<b>Operational Areas</b>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is</li></ul>

approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Feedback:**

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, then please respond to Woodside at:

[Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

**Woodside Feedback**

**Attachment A – Scarborough Seabed Intervention and Trunkline Installation – 30 September 2022**

Woodside has reviewed the Sea Shepherd Australia online public campaign in relation to the activity defined in the Scarborough Seabed Intervention and Trunkline Installation Environment Plan, and notes that content generally relates to the themes outlined in the below table. **Theme**

Assessment of climate change from activity

Concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (the SITI EP).

Woodside confirms that the SITI EP assesses 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. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI 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 SITI EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the SITI activity (ie fuel combustion from project vessels) are considered in Section 6.6.5 (Revision 1) of the publicly available SITI EP.

Trunkline installation through Montebello Multiple Use Zone

The proposed activity will include works through the Montebello Marine Park Multiple Use Zone. In accordance with the North-west Marine Parks Network Management Plan, petroleum activities including transportation of minerals by pipeline, and oil spill response are permissible subject to approval in Multiple Use Zone (IUCN category VI) and Special Purpose Zone Trawl (IUCN category VI).

Environmental Performance Outcomes (EPOs) from the Scarborough OPP relating to maintenance of the Montebello multiple use zone values have been cascaded to the SITI EP. Specifically the EPO's:

- Undertake Scarborough Trunkline Installation within the Montebello AMP in a manner that will be not be inconsistent with the objective of the multiple use zone.
- Changes to water quality in the Montebello Marine Park as a result of the trunkline installation will be not be inconsistent with the objective of the multiple use zone.

Impact assessments in Section 6 of the SITI EP include impact potential to AMP's such as the Montebello Multiple Use Zone where applicable. Receptors such as dolphins, turtles, sharks, rays and sea snakes are also included in the impact assessments where relevant (i.e. 6.6.6 Routine Acoustic Emissions is relevant to reptiles, fish and cetaceans; 6.7.7. Interaction with Marine Fauna is relevant to marine mammals, reptiles, fish, sharks and rays).

Impact assessment shows that potential consequence for marine fauna across the risk factors is maximum 'D' (Ref Figure 2-2 in the EP) which is a Minor short-term impact, with the most common consequences being Slight short-term or no lasting effect. Potential for any mortality in marine fauna as a result of the PAP is unlikely, highly unlikely or remote.

Rock art and Aboriginal cultural heritage Emissions from the activities covered by the SITI EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program (PAP). Woodside has undertaken archaeological assessments

## 2.6 Email sent to World Wildlife Fund (WWF) (30 September 2022)

Dear World Wildlife Fund

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that WWF has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

**Activity:**

**Summary:** Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

**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 block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.

**Approx. Water Depth (m):** ~ 32 m – 1400 m

**Earliest commencement date:** Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints

Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

**Estimated duration:** Approximately 24 months across multiple campaigns

**Distance from Operational Area to nearest port/marina** Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

## Operational Areas

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

## Vessels:

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

## Feedback:

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, then please respond to Woodside at: [Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

**Woodside Feedback**

## 2.7 Email sent to International Fund for Animal Welfare (IFAW) (30 September 2022)

Dear International Fund for Animal Welfare

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that International Fund for Animal Welfare has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

### Activity:

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m



**Earliest commencement date:**

Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints

Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

**Estimated duration:**

Approximately 24 months across multiple campaigns

**Distance from Operational Area to nearest port/marina**

Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels



**Feedback:**

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, then please respond to Woodside at: [Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

**Woodside Feedback**

**2.8 Email sent to Australian Marine Conservation Society (AMCS) (30 September 2022)**

Dear Australian Marine Conservation Society

Woodside has identified that Australian Marine Conservation Society has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that AMCS has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

Woodside has assessed your online public campaign and has provided detailed response at **Attachment A**.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

**Activity:**

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>

## Operational Areas

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

## Vessels:

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

## Feedback:

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities,

then please respond to Woodside at:

[Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

**Woodside Feedback**

## Attachment A – Scarborough Seabed Intervention and Trunkline Installation – 30 September 2022

Woodside has reviewed the Australian Marine Conservation Society's, online public campaign in relation to the activity defined in the Scarborough Seabed Intervention and Trunkline Installation, and notes that content generally relates to the themes outlined in the below table. **Theme** Assessment of climate change from activity

### Woodside response

Concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (the SITI EP).

Woodside confirms that the SITI EP assesses 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.

The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI 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 SITI EP but may be evaluated in Scarborough EPs as appropriate.

GHG emissions associated with the SITI activity (ie fuel combustion from project vessels) are considered in Section 6.6.5 (Revision 1) of the publicly available SITI EP.

Marine life and trunkline installation activities

Impact assessment for receptors such as marine fauna are provided in Section 6.6 and Section 6.7 of the SITI EP (Rev 1 publicly available).

Impact assessment shows that potential consequence for marine fauna across the potential risks is maximum 'D' (Ref Figure 2-2 in the EP) which is a minor short-term impact, with the most common consequences being slight short-term or no lasting effect.

Potential for any mortality in marine fauna as a result of the PAP is unlikely, highly unlikely or remote.

Assessment of light emissions

Routine Light Emissions from Project Vessels are considered in Section 6.6.4 (Rev 1) of the publicly available EP.

Assessment on vessel noise and strikes	The risk assessment on vessel noise and marine fauna is addressed in Section 6.6.6 (Rev 1) of the publicly available EP. The risks associated with vessel collision with marine fauna during the PAP are addressed in Section 6.7.2 (Rev 1) of the publicly available EP.
Assessment of impacts on Biologically Important Areas (BIAs) for turtles and other marine fauna	Tables 4-5 and Section 4.6 of the SITI EP (Rev 1 publicly available) list the relevant protected species and habitats or BIAs that overlap the Operational Area and Environment which May Be Affected (EMBA). Table 4-5 shows that within the Operational Area coral habitats may be present, however mangroves, saltmarsh and seagrass beds are only present within the broader EMBA and thus impact potential would only result from an unplanned marine diesel release due to vessel collision. In addition, potential impacts to BIAs, are described in the impact assessment in Section 6 (Revision 1) of the publicly available SITI EP.
Assessment on marine diesel spill risk	Unplanned Activities (Accidents, Incidents, Emergency Situations) from the Trunkline installation and associated activities are assessed in Section 6.7 (Rev 1) of the publicly available EP. Section 4 (Rev 1) of the publicly available EP describes the Environment that May Be Affected (EMBA) which is the largest spatial extent where unplanned events could have an environmental consequence on the surrounding

## 2.9 Email sent to Market Forces (30 September 2022)

Dear Market Forces

Woodside has identified that Market Forces has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an Environment Plan to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing

onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on Woodside's website since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that Market Forces has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by 14 October 2022.

Woodside has reviewed your online public campaign in relation to the activity defined in the Scarborough Seabed Intervention and Trunkline Installation Environment Plan, and notes that content generally relates to impacts and risks of the Scarborough Project to climate change, greenhouse gas (GHG) emissions, rock art, Aboriginal cultural heritage and an unplanned oil spill.

Woodside has assessed your online public campaign and has provided detailed response at Attachment A.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our website.

Activity:

Summary:	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
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 block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
Approx. Water Depth (m):	~ 32 m – 1400 m

Earliest commencement date:	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 24 months across multiple campaigns
Distance from Operational Area to nearest port/marina	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
Distance from Operational Area to nearest marine park	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
Operational Areas	<ul style="list-style-type: none"><li>• Scarborough Trunkline Project Area: The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.</li></ul>
Vessels:	<ul style="list-style-type: none"><li>• Trailing suction hopper dredge (TSHD)</li><li>• Offshore construction vessel (OCV)</li><li>• Fall pipe vessel (rock dump)</li><li>• Primary Installation Vessel (PIV) multi-joint operation</li><li>• Shallow Water Lay Barge (SWLB)</li><li>• Anchor handling vessel/tug</li><li>• Pipe supply vessels</li><li>• Survey vessels</li><li>• Support vessels</li><li>• Fuel bunkering vessels</li></ul>

Feedback:

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, 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 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.

Please provide your views by 14 October 2022.

Regards,

Woodside Feedback

### **Attachment A – Scarborough Seabed Intervention and Trunkline Installation – 30 September 2022**

Woodside has reviewed Market Forces online public campaign in relation to the activity defined in the Scarborough Seabed Intervention and Trunkline Installation, and notes that content generally relates to the themes outlined in the below table. **Theme**  
Assessment of climate change from activity

#### **Woodside response**

Concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (the SITI EP).

Woodside confirms that the SITI EP assesses 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. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI 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 SITI EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the SITI activity (ie fuel combustion from project vessels) are considered in



Section 6.6.5 (Revision 1) of the publicly available SITI EP.

Rock art and cultural heritage

Emissions from the activities covered by the SITI EP are of a scale and physical remoteness from Murujuga's rock art that no credible impact pathway is foreseen. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program (PAP).

Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development.

These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI EP.

A summary of this work and its results are provided in Section 4.9.1 of the EP.

No rock art will be displaced as a result of the proposed Petroleum Activities Program (PAP).

Assessment on marine diesel spill risk

Unplanned Activities (Accidents, Incidents, Emergency Situations) from the Trunkline installation and associated activities are assessed in Section 6.7 (Rev 1) of the publicly available EP.

Section 4 (Rev 1) of the publicly available EP describes the Environment that May Be Affected (EMBA) which 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 marine diesel spill.

Ecological impact thresholds used to delineate the EMBA are defined in Section 6.7.1. The worst-case credible spill scenario for this EP is a vessel collision resulting in hydrocarbon release of 2,000 m<sup>3</sup> of marine diesel.

The EMBA and the size of the worst-case credible spill scenario align with the Scarborough OPP.

The EMBA presented does not represent the predicted coverage of any one marine diesel 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,

## 2.10 Email sent to Extinction Rebellion WA (XRWA) (30 September 2022)

Dear Extinction Rebellion WA

Woodside has identified that Extinction Rebellion WA has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that Extinction Rebellion WA has not commented on the proposed activity or sought further information on it. Should you have feedback on the proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

Woodside has reviewed your online public campaign in relation to the activity defined in the Scarborough Seabed Intervention and Trunkline Installation Environment Plan, and notes that content generally relates to impacts and risks of the Scarborough Project to climate change, greenhouse gas (GHG) emissions, marine life and trunkline installation activities, rock art and Aboriginal cultural heritage.

We confirm that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (the SITI EP).

Woodside confirms that the SITI EP assesses 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. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI 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 SITI EP but may be evaluated in Scarborough EPs as appropriate.

GHG emissions associated with the SITI activity (ie fuel combustion from project vessels) are considered in Section 6.6.5 (Revision 1) of the publicly available SITI EP.

Regarding marine life and trunkline installation activities – Woodside confirms that impact assessments for receptors such as marine fauna are provided in Section 6.6 and Section 6.7 of the SITI EP (Rev 1 publicly available). Impact assessment shows that potential consequence for marine fauna across the potential risks is maximum ‘D’ (Ref Figure 2-2 in the EP) which is a Minor short-term impact, with the most common consequences being Slight short-term or no lasting effect. Potential for any mortality in marine fauna as a result of the PAP is unlikely, highly unlikely or remote.

On rock art and Aboriginal cultural heritage – Woodside confirms emissions from the activities covered by the SITI EP are of a scale and physical remoteness from Murujuga’s rock art that no credible impact pathway is foreseen. Damage to heritage sites is not anticipated as a result of the proposed Petroleum Activities Program (PAP).

Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development. These works have not identified any heritage places, objects or values which will be impacted by the activities covered by the SITI EP. A summary of this work and its results are provided in Section 4.9.1 of the EP

No rock art will be displaced as a result of the proposed Petroleum Activities Program (PAP).

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside’s consultation activities on our [website](#).

**Activity:**

**Summary:**

Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

**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

block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.

**Approx. Water Depth (m):**

~ 32 m – 1400 m

**Earliest commencement date:**

Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints

Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

**Estimated duration:**

Approximately 24 months across multiple campaigns

**Distance from Operational Area to nearest port/marina**

Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels

- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Feedback:**

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, then please respond to Woodside at:

[Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

**Woodside Feedback**

**2.11 Email sent to Climate Council (30 September 2022)**

Dear Climate Council

Woodside has identified that Climate Council has referred to the Scarborough Project in an online public campaign.

Please be advised that Woodside has submitted an [Environment Plan](#) to NOPSEMA to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

The activity involves installation of a carbon steel pipeline that runs approximately 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. Activities are planned to commence in H2 2022 for a period of approximately 24 months across multiple campaigns.

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 has been available on [Woodside's website](#) since August 2021, inviting comments on the proposed activities or requests for additional information. Revision 0 of the EP has been available on the NOPSEMA website since December 2021 ([https://info.nopsema.gov.au/environment\\_plans/575/show\\_public](https://info.nopsema.gov.au/environment_plans/575/show_public)).

Noting consultation material has been available since August 2021 and feedback was sought by 30 September 2021, we understand that Climate Council has not commented on the proposed activity or sought further information on it. Should you have feedback on the

proposed Scarborough Seabed Intervention and Trunkline Installation Environment Plan, please provide your views by **14 October 2022**.

Woodside has reviewed your online public campaign in relation to the activity defined in the Scarborough Seabed Intervention and Trunkline Installation Environment Plan, and notes that content generally relates to impacts and risks of the Scarborough Project to climate change and greenhouse gas (GHG) emissions.

We confirm that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (the SITI EP).

Woodside confirms that the SITI EP assesses 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. The extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the SITI 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 SITI EP but may be evaluated in Scarborough EPs as appropriate.

GHG emissions associated with the SITI activity (i.e., fuel combustion from project vessels) are considered in Section 6.6.5 (Revision 1) of the publicly available SITI EP.

If it would assist with consultation, Woodside would welcome the opportunity to meet with you prior to 14 October 2022, to discuss the Scarborough Seabed Intervention and Trunkline Installation Environment Plan. Should you wish to meet with Woodside, please advise as soon as possible. Beyond this timeframe, consultation is ongoing and feedback is 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.

Please note that there will be further consultation opportunities for the other activities undertaken as part of the Scarborough Project. For further information, you can subscribe to Woodside's consultation activities on our [website](#).

**Activity:**

<b>Summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints

Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.

**Estimated duration:**

Approximately 24 months across multiple campaigns

**Distance from Operational Area to nearest port/marina**

Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits

**Distance from Operational Area to nearest marine park**

- The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.
- Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.

**Operational Areas**

- **Scarborough Trunkline Project Area:** The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.
- **Offshore Borrow Ground Project Area:** Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.

**Vessels:**

- Trailing suction hopper dredge (TSHD)
- Offshore construction vessel (OCV)
- Fall pipe vessel (rock dump)
- Primary Installation Vessel (PIV) multi-joint operation
- Shallow Water Lay Barge (SWLB)
- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering vessels

**Feedback:**

If you have any issues or concerns with the proposed seabed intervention and trunkline installation activities, then please respond to Woodside at:

[Feedback@woodside.com.au](mailto: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 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.

Please provide your views by **14 October 2022**.

Regards,

## Woodside Feedback

### 2.12 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 Ben Garwood 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:



- A Summary Overview of the Scarborough project; and
- Respective Summary Information sheets

BTAC can also provide feedback directly to [REDACTED] on the details below, to [Feedback@woodside.com.au](mailto: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](mailto: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

### 2.13 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 accordance 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**

Regarding The Wildemess 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 response to general queries which were not specific to the relevant EPs, Woodside confirmed the Scarborough reservoir contains dry gas and negligible levels of carbon dioxide. Woodside also confirmed employees are not financially incentivised (by way of bonus for example) to achieve acceptance of EPs.

In relation to The Wildemess 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. Further to Woodside's response during the meeting, Woodside can confirm the risk assessments in the Seismic EP conclude that impacts to zooplankton are likely to be localised ( $\leq 110$  m from the seismic source) and localised changes in zooplankton abundance are likely to be replenished and indistinguishable from natural levels and distributions within hours of a seismic survey vessel passing.

During the meeting, Woodside agreed to provide The Wildemess Society with details on the comparison of the proposed Scarborough seismic activity with previously completed seismic surveys. Woodside can confirm that the key characteristics of the Scarborough 4D B1 Marine Seismic Survey are within the range of other recent surveys completed in the area. Table 6-10 of the Seismic EP details seismic surveys undertaken in the last five years (2016-2021), within 150 km of the proposed activity.

Woodside also agreed to share with The Wildemess Society additional information on whether it is considering alternatives to seismic for future activities over the next 10 to 15 years. As discussed during the meeting, within the Subsea EP, Woodside is proposing to acquire a seabed gravimetry survey in permit areas WA-61-L and WA-62-L as a complementary geophysical technology to the new seismic data. This technique delivers a field-wide measurement of gravity, providing direct measurement of water movement or saturation and reservoir compaction or subsidence in the Scarborough reservoir.

Woodside has and continues to closely follow the development of marine seismic vibrator technology and has participated in technical forums held with seismic contractors. However, this technology is still in research and development phase and is yet to be offered commercially by seismic contractors.

Woodside considered the trial of a small-scale ocean bottom node survey, using emerging technology with autonomous underwater vehicles, as part of the Scarborough seismic survey. This was included in the initial Seismic EP; however, due to technical issues with this technology, the scope was removed from the EP (Revision 5).

Woodside confirms it remains interested in the use of autonomous seismic nodes as an alternative to towed streamers. The use of autonomous seismic nodes may reduce the acoustic energy source required, reduce the time taken to acquire the survey and minimise the sea surface footprint.

Lastly, Woodside noted The Wildemess Society's interest in understanding Woodside's embedded science approach to address knowledge gaps and scientific uncertainty relating to the impacts of marine seismic survey on marine life. Woodside confirms that it continues to support scientific research on the impacts of marine seismic surveys including a funding contribution to assessing seismic impacts on demersal fishes in tropical shelf environments. [Meekan et al. \(2021\)](#) found that a large-scale experiment seismic survey did not alter fish abundance or behaviour in multiple before-after-control-impact and dose-response experimental frameworks. The study was conducted as part of Australian Institute of Marine Science's (AIMS) North West Shoals to Shore Research Program.

Woodside recognises and supports the work of the International Association of Oil & Gas Producers' (IOGP) Sound and Marine Life Joint Industry Programme (JIP). The JIP is currently planning Phase 4 of the research program. Six priority areas of new projects within the program include alternative seismic sound sources and reduction and physical impacts and behavioural reactions of industry sound on marine life.

Woodside also supports the Australian Government's development of a National Guideline on Management of Underwater Noise and a re-drafting of EPBC Policy 2.1 (Interaction between offshore seismic exploration and whales: Industry guidelines). Woodside and the wider industry are participating in the consultation process for these pieces of work.

Woodside thanks The Wilderness Society again for an informative and open discussion. This letter serves as confirmation that Woodside consulted The Wilderness Society on the Seismic EP, the D&C EP, the SITI EP, State Waters EP and the Subsea EP. A consultation summary will continue to be included in each of the EPs and will be updated to reflect recent discussions.

Woodside notes 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.

Should The Wilderness Society have additional feedback on the proposed activities discussed during the meeting or in response to the information provided, Woodside will continue to engage with The Wilderness Society in line with Woodside's ongoing engagement approach throughout the life of the relevant environment plans.

Noting The Wilderness Society's more general interest in carbon offsets, biodiversity and native vegetation, though outside of the scope of the Scarborough Project consultation, Woodside would welcome the opportunity for The Wilderness Society to meet with subject matter advisers from Woodside to discuss the work that is being undertaken in this space.

Kind regards,

[Redacted signature]

## 2.14 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](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](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**

## 2.15 Email sent to Australian Institute of Marine Science (AIMS) (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 AIMS may be undertaking that may overlap with our proposed activities.



We would be grateful for your advice and any other feedback AIMS 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 accordance 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

## 2.16 Email sent to Coastal Oil and Gas (11 November 2022)

Dear Titleholder,

Woodside has submitted an Environment Plan (EP) to undertake seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development, in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth).

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. The Information Sheet is also available on our [website](#). A map showing the proposed activity relevant to adjacent petroleum titles is also attached.

Woodside has previously submitted Revision 1 of the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (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](https://info.nopsema.gov.au/environment_plans/575/show_public)). Woodside is preparing a Revision 3 of the SITI EP for submission to NOPSEMA. We confirm the activities, location and duration described in Revision 1 of the publicly available SITI EP remain the same, with no material changes.

This 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.

More information on the Scarborough Project can be found [here](#).

Please provide your views by **25 November 2022**.

### Activity:

#### Summary:

Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.

<b>Location:</b>	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title block WA-61-L, approximately 375 km west-northwest of the Burrup Peninsula.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints  Trunkline installation activities: Q4 2023 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns
<b>Distance from Operational Area to nearest port/marina</b>	Eastern end of the Trunkline route overlaps with the Pilbara Port Authority Dampier Port Limits
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"><li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cth), close to the northern boundary.</li><li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone. A minimum 250 m buffer will be in place from the Marine Park boundaries.</li></ul>
<b>Operational Areas</b>	<ul style="list-style-type: none"><li>• <b>Scarborough Trunkline Project Area:</b> The proposed Trunkline from the Scarborough FPU (approximately 430 km north-west of the Burrup) to the State waters boundary and 1.5 km either side of the proposed Trunkline centreline to allow for the movement and positioning of vessels. This also includes Spoil Ground 5A, which is approximately 300 m wide and runs ~17 km from the State waters boundary.</li><li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground (location where sand will be sourced). The Offshore Borrow Ground is approximately 17 km<sup>2</sup>, located 20 km to the east of the proposed Trunkline route and adjacent to the Dampier Marine Park.</li></ul>
<b>Vessels:</b>	<ul style="list-style-type: none"><li>• Trailing suction hopper dredge (TSHD)</li><li>• Offshore construction vessel (OCV)</li><li>• Fall pipe vessel (rock dump)</li><li>• Primary Installation Vessel (PIV) multi-joint operation</li><li>• Shallow Water Lay Barge (SWLB)</li></ul>

- Anchor handling vessel/tug
- Pipe supply vessels
- Survey vessels
- Support vessels
- Fuel bunkering 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](mailto: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 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.

Please provide your views by **25 November 2022**.

Regards,

**2.17 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO) (11 November 2022)**

Dear ■■■

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 CSIRO may be undertaking that may overlap with our proposed activities.

We would be grateful for your advice and any other feedback CSIRO 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 accordance 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

## 2.18 Email sent to Australian Institute of Marine Science (AIMS) (6 February 2022)

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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **8 March 2023**.

**Activity:**

	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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.
<b>Location:</b>	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.

<b>Approx. Water Depth (m):</b>	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	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).
<b>Estimated duration:</b>	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	~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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated</li> </ul>

			throughout the proposed activities
<b>Vessels:</b>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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 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**.

**2.19 Emails sent to Malgana Aboriginal Corporation (MAC) – 20 January 2023**

Good afternoon [redacted] and [redacted]

I had a bounce back from the [redacted] address that was listed on ORIC so am resending to [info@malgana.org.au](mailto: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:

- A Summary Overview of the Scarborough project; and
- 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](mailto: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](mailto: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]  
[REDACTED]

### 3 CONSULTATION (2023)

#### 3.1 Email sent to Yinggarda Aboriginal Corporation (YAC) – 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:

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](mailto: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](mailto: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 signature block]



### 3.2 Email sent to Nanda Aboriginal Corporation – 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:

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. NAC can also provide feedback directly to [REDACTED] or me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto: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]

### 3.3 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:

3. A Summary Overview of the Scarborough project; and
4. Respective Summary Information sheets

NTGAC can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto: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.









NAC can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto: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]

[REDACTED]

### 3.7 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:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

RRKAC can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto: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

██████████

### 3.8 Email sent to Wirrawandi Aboriginal Corporation (WAC) – 20 January 2023

Good morning ██████████

In follow up to previous email correspondence from my colleague ██████████, 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 ██████████ 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:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

WAC can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto: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

██████████

██

### 3.9 Email sent to Nyangumarta Warrarn Aboriginal Corporation (23 January 2023)

Dear ██████████

Woodside are reaching out to Nyangumarta Warrarn Aboriginal Corporation (RNTBC) to provide 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 attached.

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 Nyangumarta Warrarn Aboriginal Corporation 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 ‘Scarborough Seabed Intervention and Trunkline Installation’ 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 Nyangumarta Warrarn Aboriginal Corporation requires to prepare for a meeting, please let me know. In the meantime, I have attached for Nyangumarta Warrarn Aboriginal Corporation’s review:

- A Summary Overview of the Scarborough project; and
- Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation

Nyangumarta Warrarn Aboriginal Corporation can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto:communications@nopsema.gov.au) or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to Nyangumarta Warrarn Aboriginal Corporation members as required. Woodside would be pleased to speak with Nyangumarta Warrarn Aboriginal Corporation members in addition to the Nyangumarta Warrarn Aboriginal Corporation Board / office holders.

We look forward to hearing from you.

Sincerely,

██████████

### 3.10 Email sent to Wanparta Aboriginal Corporation – 23 January 2023

Dear ██████

Woodside are reaching out to Wanparta Aboriginal Corporation to provide 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 attached.

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 Wanparta Aboriginal Corporation 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 'Scarborough Seabed Intervention and Trunkline Installation' 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 Wanparta Aboriginal Corporation requires to prepare for a meeting, please let me know. In the meantime, I have attached for Wanparta Aboriginal Corporation's review:

2. A Summary Overview of the Scarborough project; and
3. Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation

Wanparta Aboriginal Corporation can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto:communications@nopsema.gov.au) or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to Wanparta Aboriginal Corporation members as required. Woodside would be pleased to speak with Wanparta Aboriginal Corporation members in addition to the Wanparta Aboriginal Corporation Board / office holders.

We look forward to hearing from you.

Sincerely,

██████████

### 3.11 Emails sent to Kariyarra Aboriginal Corporation – 23 January 2023

Good morning

Please see the email below which bounced back this morning from the address for ██████████. It would be greatly appreciated if you were able to please share this information with the relevant representatives within the Kariyarra Aboriginal Corporation.

Thank you in advance

██████████

Good morning ██████████



I hope my email finds you well. I tried calling the office of the Kariyarra Aboriginal Corporation (KAC) on the phone listed on the website but have not been able to connect in person, hence following up with this email.

Woodside are reaching out to KAC to provide 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 attached.

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 Kariyarra Aboriginal Corporation (KAC) 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 'Scarborough Seabed Intervention and Trunkline Installation' 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 KAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for KAC's review:

3. A Summary Overview of the Scarborough project; and
4. Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation

KAC can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto:communications@nopsema.gov.au) or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to KAC members as required. Woodside would be pleased to speak with KAC members in addition to the KAC Board / office holders.

We look forward to hearing from you.

Sincerely,

### 3.12 Email sent to Karajarri Traditional Lands Association (23 January 2023)

Dear [REDACTED]

In follow up to a voice message I left for the Karajarri Traditional Lands Association (KTLA) this morning, I wanted to follow up with the email and information I referred to.

Woodside are reaching out to KTLA to provide 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 attached.

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 KTLA 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 'Scarborough Seabed Intervention and Trunkline Installation' 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 KTLA requires to prepare for a meeting, please let me know. In the meantime, I have attached for KTLA's review:

4. A Summary Overview of the Scarborough project; and
5. Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation

KTLA can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto:communications@nopsema.gov.au) or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to KTLA members as required. Woodside would be pleased to speak with KTLA members in addition to the KTLA Board / office holders.

We look forward to hearing from you.

### 3.13 Email sent to Kariyarra Aboriginal Corporation – 24 January 2023

Dear [REDACTED]

I have been provided your details by [REDACTED] who promptly responded to my original email which was sent to the incorrect addressee. Sincere apologies for this.

[REDACTED], Woodside are reaching out to provide 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 attached.

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 Kariyarra Aboriginal Corporation (KAC) 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 'Scarborough Seabed Intervention and Trunkline Installation' 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 KAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for KAC's review:

5. A Summary Overview of the Scarborough project; and
6. Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation

KAC can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto:communications@nopsema.gov.au) or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to KAC members as required. Woodside would be pleased to speak with KAC members in addition to the KAC Board / office holders.

We look forward to hearing from you.

Sincerely,

██████████

### **3.14 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) – 27 January 2023**

Dear ██████████

Firstly, thank you for your correspondence of 20 February regarding consultations about the Scarborough project. We will respond to this correspondence in the coming days and would be most grateful for the opportunity to meet with you to discuss the matters raised in your letter and our relationship more broadly.

Further to my correspondence of 18 January regarding Woodside's plan to remove the Nganhurra Riser Turret Mooring (RTM), and 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 Buurabalayji Thalanyji Aboriginal Corporation (BTAC) about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking BTAC's feedback as soon as possible, Woodside is seeking BTAC'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 \(woodside.com\)](#)

We look forward to meeting with you to discuss and respond to the matters raised in your letter, this correspondence, and to discuss other matters important to BTAC and Woodside.

Thank you, [REDACTED], for yours and [REDACTED] consideration and work to progress these important consultations. We are looking forward to working with BTAC.

As always, please feel free to contact me on the details below if you require further information or assistance.

Yours sincerely

[REDACTED]

### 3.15 Email sent to Nyangumarta Karajarri Aboriginal Corporation (23 January 2023)

Dear [REDACTED]

Woodside are reaching out to you as the listed contact person for the Nyangumarta Karajarri Aboriginal Coporation (RNTBC) to provide 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 attached.

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 Nyangumarta Karajarri Aboriginal Corporation 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 'Scarborough Seabed Intervention and Trunkline Installation' 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 Nyangumarta Karajarri Aboriginal Corporation requires to prepare for a meeting, please let me know. In the meantime, I have attached for Nyangumarta Karajarri Aboriginal Corporation's review:

6. A Summary Overview of the Scarborough project; and
7. Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation

Nyangumarta Karajarri Aboriginal Corporation can also provide feedback directly to me on the details below, to [Feedback@woodside.com.au](mailto: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](mailto:communications@nopsema.gov.au) or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to Nyangumarta Karajarri Aboriginal Corporation members as required. Woodside would be pleased to speak with Nyangumarta Karajarri Aboriginal Corporation members in addition to the Nyangumarta Karajarri Aboriginal Corporation Board / office holders.

We look forward to hearing from you.

Sincerely,

██████████

## 4 ACTIVITY UPDATE (2023)

### 4.1 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m



<p><b>Earliest commencement date:</b></p>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).</p>
<p><b>Estimated duration:</b></p>	<p>~24 months across multiple campaigns</p>	<p>~50 – 60 days per well</p>	<p>~55 – 70 days</p>	<p>~18 months (cumulative) for the survey and installation activities</p>
<p><b>Distance from Operational Area to nearest town</b></p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>
<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• Trunkline Project Area: The proposed trunkline from around KP 32</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> </ul>

	<p>(Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<ul style="list-style-type: none"> <li>Moored MODU – 4,000 m radius from each well centre.</li> <li>Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<p>seismic vessel and third-party vessels</p> <ul style="list-style-type: none"> <li>Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<ul style="list-style-type: none"> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> <li>Anchor handling vessel/tug</li> <li>Pipe supply vessels</li> <li>Offshore construction vessel</li> <li>Survey vessels</li> <li>Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>Installation vessels for installing the subsea infrastructure</li> <li>Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>A purpose-built seismic vessel</li> <li>One support vessel</li> <li>A potential chase vessel, and</li> <li>An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**Woodside Feedback**

**4.2 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.



<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<p>hardware installation or contingent activities</p> <ul style="list-style-type: none"> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**Woodside Feedback**

### 4.3 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

<p><b>Earliest commencement date:</b></p>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).</p>
<p><b>Estimated duration:</b></p>	<p>~24 months across multiple campaigns</p>	<p>~50 – 60 days per well</p>	<p>~55 – 70 days</p>	<p>~18 months (cumulative) for the survey and installation activities</p>
<p><b>Distance from Operational Area to nearest town</b></p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>
<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• Trunkline Project Area: The proposed trunkline from around KP 32</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> </ul>

	<p>(Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<ul style="list-style-type: none"> <li>Moored MODU – 4,000 m radius from each well centre.</li> <li>Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<p>seismic vessel and third-party vessels</p> <ul style="list-style-type: none"> <li>Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<ul style="list-style-type: none"> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> <li>Anchor handling vessel/tug</li> <li>Pipe supply vessels</li> <li>Offshore construction vessel</li> <li>Survey vessels</li> <li>Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>Installation vessels for installing the subsea infrastructure</li> <li>Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>A purpose-built seismic vessel</li> <li>One support vessel</li> <li>A potential chase vessel, and</li> <li>An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.4 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.**

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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close</li> </ul>	<ul style="list-style-type: none"> <li>~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>~206 km north-west of Montebello Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>~ 201 km north-west of</li> </ul>



	<p>to the northern boundary</p> <ul style="list-style-type: none"> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>		<p>Montebello Marine Park (Cwlth)</p> <ul style="list-style-type: none"> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

	<p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<p>handling vessel(s) and general supply/support vessels</p>		
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.5 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](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](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](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](mailto: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
<b>Summary:</b>	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

<p><b>Earliest commencement date:</b></p>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).</p>
<p><b>Estimated duration:</b></p>	<p>~24 months across multiple campaigns</p>	<p>~50 – 60 days per well</p>	<p>~55 – 70 days</p>	<p>~18 months (cumulative) for the survey and installation activities</p>
<p><b>Distance from Operational Area to nearest town</b></p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>
<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• Trunkline Project Area: The proposed trunkline from around KP 32</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> </ul>

	<p>(Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<ul style="list-style-type: none"> <li>Moored MODU – 4,000 m radius from each well centre.</li> <li>Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<p>seismic vessel and third-party vessels</p> <ul style="list-style-type: none"> <li>Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<ul style="list-style-type: none"> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> <li>Anchor handling vessel/tug</li> <li>Pipe supply vessels</li> <li>Offshore construction vessel</li> <li>Survey vessels</li> <li>Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>Installation vessels for installing the subsea infrastructure</li> <li>Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>A purpose-built seismic vessel</li> <li>One support vessel</li> <li>A potential chase vessel, and</li> <li>An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.6 Email sent to Western Gas, Santos, Exxon Mobil Australia Resources Company, Shell Australia, FINDER Energy, KUFPEC, OMV Australia / Sapura OMV Upstream (WA) – 27 January 2022**

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**);
- 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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	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).



	waters. A separate EP covers activities in State waters.			Mooring legs and suction piles will also be installed and a gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine</li> </ul>	<ul style="list-style-type: none"> <li>~83 km north of the Gascoyne Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> </ul>

<p><b>Area to nearest marine park</b></p>	<p>Park – Multiple Use Zone (Cwth), close to the northern boundary</p> <ul style="list-style-type: none"> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>		<ul style="list-style-type: none"> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>



	<ul style="list-style-type: none"> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>		
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.7 Email sent to Jadestone, Coastal Oil and Gas, Bounty Oil and Gas, Vermilion Oil and Gas, KATO Energy (27 January 2023)**

Dear Titleholder

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m

<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Operational Area and Exclusion Zones</b>	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>
<b>Vessels:</b>	<b>Seabed intervention:</b> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <b>Trunkline installation:</b> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>

### **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](mailto: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,

**4.8 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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

<p><b>Earliest commencement date:</b></p>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).</p>
<p><b>Estimated duration:</b></p>	<p>~24 months across multiple campaigns</p>	<p>~55 – 70 days</p>	<p>~18 months (cumulative) for the survey and installation activities</p>
<p><b>Distance from Operational Area to nearest town</b></p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>
<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> </ul>



	<p>proposed trunkline centreline.</p> <ul style="list-style-type: none"> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>Information Sheet for detailed survey location points</p>	<ul style="list-style-type: none"> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.9 Email sent to INPEX Alpha (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**);
- 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**).

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](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](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](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 SITI EP and D&C 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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>
<b>Summary:</b>	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).
<b>Location:</b>	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	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.

		Consultation Information Sheet.	
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m
<b>Earliest commencement date:</b>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	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.
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• Trunkline Project Area: The proposed</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of</li> </ul>

	<p>trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<ul style="list-style-type: none"> <li>Moored MODU – 4,000 m radius from each well centre.</li> <li>Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<p>the seismic vessel and third-party vessels</p> <ul style="list-style-type: none"> <li>Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> <li>Anchor handling vessel/tug</li> <li>Pipe supply vessels</li> <li>Offshore construction vessel</li> <li>Survey vessels</li> <li>Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>Installation vessels for installing the subsea infrastructure</li> <li>Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>A purpose-built seismic vessel</li> <li>One support vessel</li> <li>A potential chase vessel, and</li> <li>An additional spotter vessel (May to June)</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>

**4.10 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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities

<p><b>Distance from Operational Area to nearest town</b></p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>
<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>Seismic EP</b>

**4.11 Email sent to Ningaloo Coast World Heritage Advisory Committee (NCWHAC) (27 January 2023)**

Dear [REDACTED] / Ningaloo Coast World Heritage Advisory Committee

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	SITI EP
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>



<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>

**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](mailto: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 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,

**4.12 Email sent to Karratha Community Liaison Group (including City of Karratha) (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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

#### **Activity:**

	SITI EP	D&C EP	Seismic EP	Subsea EP
<b>Summary:</b>	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending 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	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with

	<p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>		availability and weather constraints.	activities occurring in multiple campaigns).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> </ul>

	<p>proposed trunkline centreline.</p> <ul style="list-style-type: none"> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>		<p>Consultation Information Sheet for detailed survey location points</p>	<ul style="list-style-type: none"> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.13 Email sent to Shire of Ashburton (27 January 2023)**

Dear [REDACTED]

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**



	<b>SITI EP</b>
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Operational Area and Exclusion Zones</b>	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>
<b>Vessels:</b>	<b>Seabed intervention:</b> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul>

	<p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"><li>• Pipelay Vessel multi-joint operation</li><li>• Shallow Water Lay Barge</li><li>• Anchor handling vessel/tug</li><li>• Pipe supply vessels</li><li>• Offshore construction vessel</li><li>• Survey vessels</li><li>• Fuel bunkering vessels</li></ul>
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**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](mailto: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 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,

**4.14 Email sent to Town of Port Hedland (27 January 2023)**

Dear Town of Port Hedland

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.



The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>

<b>Operational Area and Exclusion Zones</b>	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: <ul style="list-style-type: none"><li>• 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.</li><li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li></ul>
<b>Vessels:</b>	<b>Seabed intervention:</b> <ul style="list-style-type: none"><li>• Trailing suction hopper dredge</li><li>• Offshore construction vessel</li><li>• Rock Installation Vessel</li><li>• Survey vessels</li><li>• Support vessels</li><li>• Fuel bunkering vessels</li></ul> <b>Trunkline installation:</b> <ul style="list-style-type: none"><li>• Pipelay Vessel multi-joint operation</li><li>• Shallow Water Lay Barge</li><li>• Anchor handling vessel/tug</li><li>• Pipe supply vessels</li><li>• Offshore construction vessel</li><li>• Survey vessels</li><li>• Fuel bunkering vessels</li></ul>

**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](mailto: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 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,

**4.15 Email sent to Shire of Carnarvon (27 January 2023)**

Dear Shire of Carnarvon

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b>

	Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>

**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](mailto: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 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,

#### 4.16 Email sent to Onslow Chamber of Commerce and Industry (27 January 2023)

Dear [REDACTED]

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

#### Activity:

	SITI EP
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Operational Area and Exclusion Zones</b>	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>
<b>Vessels:</b>	<b>Seabed intervention:</b> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <b>Trunkline installation:</b> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> </ul>



- |                          |
|--------------------------|
| • 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](mailto: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 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,

**4.17 Email sent Port Hedland Chamber of Commerce and Industry (27 January 2023)**

Dear Port Hedland Chamber of Commerce and Industry

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Operational Area and Exclusion Zones</b>	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>



<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>
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**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](mailto: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 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,

**4.18 Email sent Carnarvon Chamber of Commerce and Industry (27 January 2023)**

Dear Carnarvon Chamber of Commerce and Industry

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **26 February 2023**.

**Activity:**

	<b>SITI EP</b>
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.

<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>

**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](mailto: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 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,

#### 4.19 Email sent to Exmouth Community Reference Group (ECRG) (including Shire of Exmouth) (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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **3 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

<p><b>Earliest commencement date:</b></p>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).</p>
<p><b>Estimated duration:</b></p>	<p>~24 months across multiple campaigns</p>	<p>~50 – 60 days per well</p>	<p>~55 – 70 days</p>	<p>~18 months (cumulative) for the survey and installation activities</p>
<p><b>Distance from Operational Area to nearest town</b></p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>
<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• Trunkline Project Area: The proposed trunkline from around KP 32</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> </ul>



	<p>(Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<ul style="list-style-type: none"> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<p>seismic vessel and third-party vessels</p> <ul style="list-style-type: none"> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.20 Email sent to Cape Conservation Group (1 February 2023)**

Dear [REDACTED]

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **3 March 2023**.

**Activity:**

	<b>SITI EP</b>
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Operational Area and Exclusion Zones</b>	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>

<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>
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***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](mailto: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,

**4.21 Email sent to Protect Ningaloo (1 February 2023)**

Dear Protect Ningaloo

Woodside has submitted an Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **3 March 2023**.

**Activity:**

	<b>SITI EP</b>
<b>Summary:</b>	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 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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.

<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>

**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](mailto: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 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,

#### 4.22 Email sent to Pilbara Ports Authority (PPA) – 1 February 2023

Dear [REDACTED] and [REDACTED]

Woodside previously consulted you on its submitted Environment Plan (EP) to undertake 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**) for the Scarborough development.

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. This is also available on our [website](#).

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](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 remain the same, with no material changes.

The SITI EP falls 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 EP, please respond to Woodside at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or 1800 442 977 by **3 March 2023**.

#### Activity:

	SITI EP
<b>Summary:</b>	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 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.
<b>Location:</b>	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.

<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~24 months across multiple campaigns
<b>Distance from Operational Area to nearest town</b>	The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>

**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](mailto: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 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,

#### **4.23 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]  
[REDACTED]



#### 4.24 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.

4. A Summary Overview of the Scarborough project;
5. Summary Information Sheet – Scarborough Seabed Intervention and Trunkline Installation
6. 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]

#### 4.25 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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **3 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 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).

	<b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> <li>Anchor handling vessel/tug</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>Subsea EP</b>

**4.26 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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **3 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m

<b>Earliest commencement date:</b>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>Subsea EP</b>



#### 4.27 State Shipwrecks information sent to Department of Planning, Lands and Heritage (DPLH), Western Australian Museum (1 February 2023)

Scarborough Seabed Intervention and Trunkline Installation (SITI)

Vessel name	Year wrecked	Wreck location	Latitude	Longitude
Denan	1886/12/23	Point Cloates	113.6733333	22.74299887
Perth SS	1887/05/17	Point Cloates	113.6403333	-22.69416667
Rapid	1811/01/07	Ningaloo Reef	113.6933333	-22.73333333
Stefano	1875/10/27	Point Cloates	113.7195	-22.82883333
Inal	1622/05/24	Inal Rocks	115.3736667	-20.28716667
Zvir SS	27/11/1902	Point Cloates	113.626	-22.60016667
Mildura SS	12/03/1907	North-West Cape	114.1666667	-21.78566667
Fin SS	15/02/1923	Point Cloates, Fraser Island	113.6268333	-22.84803333
Lady Ann	1805/1582	24 miles north of NW Cape	114.2	-21.4

#### 4.28 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**

	SITI EP	D&C EP	Seismic EP	Subsea EP
<b>Summary:</b>	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.



<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> </ul>

	<ul style="list-style-type: none"> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	Ningaloo Marine Park (Cwlth)		<ul style="list-style-type: none"> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	supply/support vessels		
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**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](mailto: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 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,

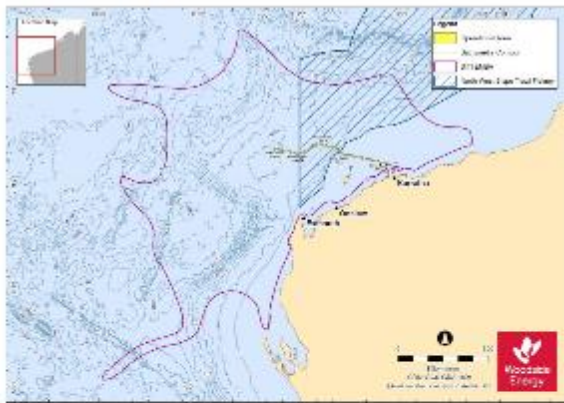
**APPENDIX A**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

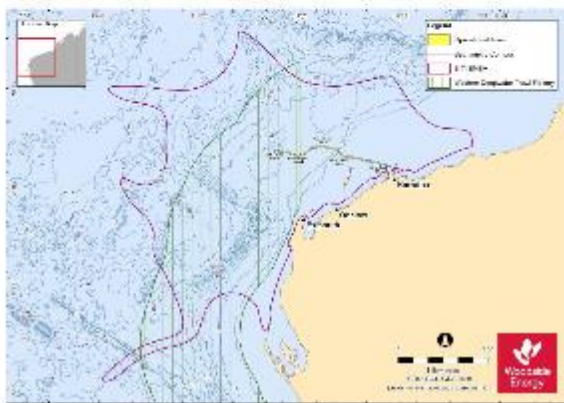
**Woodside Feedback**

Scarborough Seabed Intervention and Trunkline Installation EP (SITI EP)

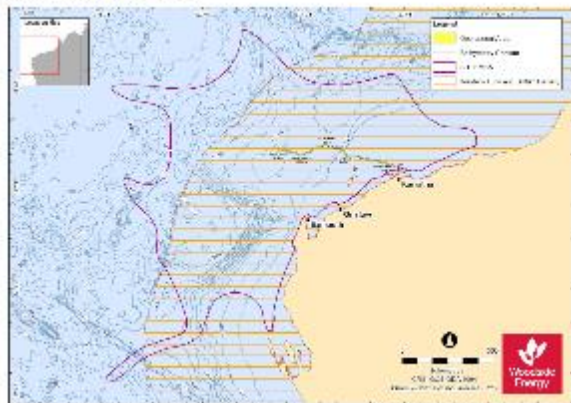
Both Well Sites and Trunk Lines



Western Deepwater Trawl Fishery



Western Tuna and British Fishery



**4.29 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](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](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](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](mailto: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:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of



	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.	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.	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).	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).

<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• An interactive map showing the location of the proposed activities will be available on the Woodside website and will</li> </ul>

				be updated throughout the proposed activities
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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 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,

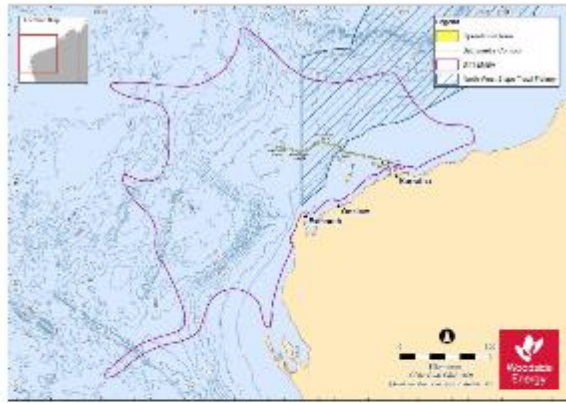
**APPENDIX A**



<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

Scarborough Seabed Intervention and Trunkline Installation EP (SITI EP)

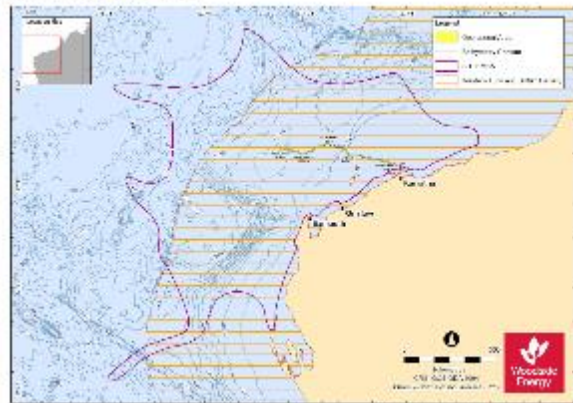
Both West Slope and Core Fishery



Western Deepwater Trawl Fishery



Western Tuna and British Fishery



4.29.1 Commonwealth Shipwrecks information sent to DCCEEW / DAFF (3 February 2023)

Scarborough Seabed Intervention and Trunkline Installation (SITI)

Vessel name	Year wrecked	Wreck location	Latitude	Longitude
Olive	1916	Dorre Island, Carnarvon	-24.85	112.9167
Olive	1893	Exmouth Gulf	-21.75	114.0833
Parks Lugger		Hermite Island, Montebello Islands	-20.4771	115.5285
Pearl	1896	Exmouth Gulf, Meda Creek	-21.75	114.0833
Pearline	1893	Shark Bay	-24.5	113
Two Sons	1902	Shark Bay	-24.5	113
Vianen	1628	Barrow Island Area	-20	115.1667
Stranger	1893	Shark Bay	-24.5	113
Strathmore	1870	Point Cloates	-22.55	113.5
Prince Charlie	1850	Shark Bay	-24.5	113
Queen	1891	Off Point Cloates	22.55	113.5
Rapid	1811	Ningaloo Reef	-22.7394	113.6926
Vittoria	1929	Dorre Island	24.8333	112.9333
Wild Wave ( China )	1873	Monte Bello Island	20	115.1667
Zvir	1902	Point Cloates	-22.6092	113.626
S.S.S.	1901	Off Point Cloates	-22.65	113.5833
Shunsei Maru	1931	Carbaddaman Passage, north of Point Cloates	-22.4167	113.6833
Smuggler	1893	Exmouth Gulf	-21.75	114.0833
Haw Kiel	2003		-18.4582	117.2583
		Around 55 kilometres south of the Cape at Carbaddaman Passage		
Hawk			-22.45	113.7333
Hildas	1893	Shark Bay	-24.5	113
Jane Bay One Unidentified		Jane Bay	-22.7323	113.7321
Kadma	1902		1902 -17.9617	112.2364
Mabel	1893	Exmouth Gulf	-21.75	114.0833
Marietta	1905	Barrow Island	-20	115.1667
Marutta	1905		-20.7278	115.4262
Matchless	1893	Shark Bay	-24.5	113
Koombana	1912	Port Hedland and Broome, Bedout Island	-19.4	118.9
Lady Ann	1962	24 miles north of NW Cape	-21.4	114.2
Lamareaux	1893	Exmouth Gulf	-21.75	114.0833
Leave	1893	Exmouth Gulf	-21.75	114.0833
Cock Of The North	1879	Point Cloates	-22.55	113.5
Abandoned Fishing Vessel	2006		-18.0167	109.1
Agnos	1893	Exmouth Gulf	21.75	114.0833
Amelia	1874	Shark Bay	24.5	113
Beatrice	1899	Off North-West Cape	-21.6167	113.9833
Bell	1893	Exmouth	-21.75	114.0833
Benan	1888	Point Cloates	-22.7415	113.6745
Bertha	1874	Reef off Point Cloates	-22.55	113.5
Elizabeth	1893	Exmouth Gulf	-21.75	114.0833
Fveline	1893	Shark Bay	-24.5	113
Fin	1923	Point Cloates, Fraser Island	-22.6476	113.6283
Florence	1893	Exmouth Gulf	-21.75	114.0833
Don Joseph	1899	6.5 Kilometres North of Point Cloates	22.6167	113.6
Mildura	1907	North-West Cape	-21.7841	114.1677
Min Pin Liu No. 25 (Also Ming Pin Liu)	1999	Cornelisse Shoal	-20.0411	118.3681
Norwegian Bay Unidentified Barge		Off Norwegian Bay Whaling Station	22.5924	113.6706
		Around 55 kilometres south of the Cape at Carbaddaman Passage		
Occator	1856		-22.4167	113.6833
Tanami		Trial Rocks	-20.2833	115.3667
Trial	1622	Trial Rocks	-20.286	115.3752
Unidentified Boat (2)	1893	Shark Bay	-24.5	113
Patience	1930	Between Red Bluff and Cape Cuvier	24	113.2
Perentie	1976	Barrow Island	-20.7278	115.4262
Perth	1887	Point Cloates	-22.6925	113.6123
Unidentified Lugger	1893	Exmouth Gulf	21.75	114.0833
Veronica	1928	Sunday Island, Exmouth Gulf	-21.6833	114.3833
Lily Of The Lake	1875	Exmouth Gulf	-21.75	114.0833

Louisa	1893	Shark Bay	-24.5	113
Ruby	1893	Exmouth Gulf	-21.75	114.0833
Sarah	1893	Shark Bay	-24.5	113
Sea Queen	1893	Exmouth Gulf	-21.75	114.0833
Sisters	1893	Shark Bay	24.5	113
Star Of The North	1893	Shark Bay	-24.5	113
Stefano	1875	Point Cloates	-22.8268	113.7212
Wild Wave	1875	Exmouth Gulf	-21.75	114.0833
Wyndham	1910	Point Cloates	-22.55	113.5
G.G.S.	1883	Pt Cloates	-22.55	113.5
Gem	1893	North West Cape	-21.6167	113.9833
Genesta	1909	Off Dorre Island	-24.8333	112.9333
Chofuku Maru	1931	Point Cloates	22.5176	113.663
Dot	1893	Shark Bay	24.5	113
Ellen	1893	Exmouth Gulf	-21.75	114.0833
Ernlyn Castle	1960		21.7847	114.165
Iona	1923	Point Cloates, entering Black Rock Passage	-22.8	113.6333
Kapala	1964	Exmouth Gulf	-21.75	114.0833
Maratta	1905		-20.7278	115.4261
Curlew	1911	At Onslow, Monte Bellos Group	-20	115.1667
Dampier		Enderby Island, Dampier Archipelago	-20.5233	116.2367
Nellie	1893	Exmouth Gulf	21.75	114.0833
Jane Bay Two Unidentified		Jane Bay, Point Cloates	-22.7379	113.74
McCormack	1989	N.E. tip of Eaglehawk Island West of Dampier, N.E. tip of Eaglehawk Island, Dampier Archipelago	20.1367	115.9533
McDermott Derrick Barge No 20	1989	Archipelago	-20.1367	115.9533
Norwegian Bay Whaling Station boat	1990	10 m N of whaling station jetty	-22.5927	113.6716
Plym HMS	1952		-20.4035	115.5658
Tropic Queen	1975		20.4333	115.5008

#### 4.30 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.



<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<p>hardware installation or contingent activities</p> <ul style="list-style-type: none"> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

Scarborough Seabed Intervention and Trunkline Installation EP (SITIEP)

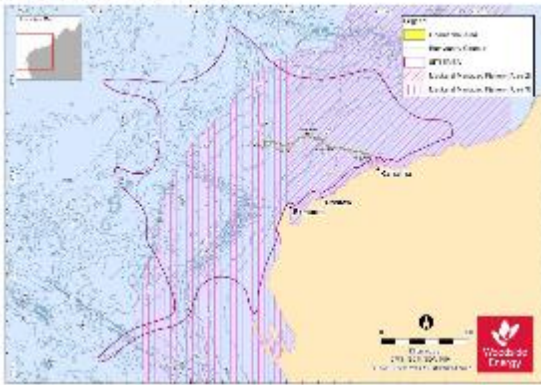
Map 15: Southern Managed Fishery



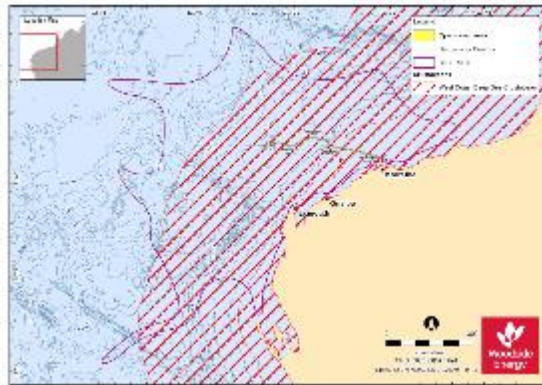
Eastern Cuck Managed Fishery



Midwest Managed Fishery (Area 2 only)



West Coast Deep Sea Crustacean Managed Fishery



Deepwater Shell Fishery



Rickel Bay Prawn Managed Fishery



Oceania Prawn Managed Fishery

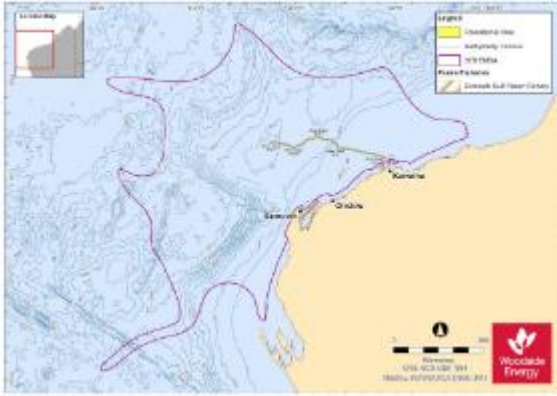


Western Australian Sea Cucumber Managed Fishery





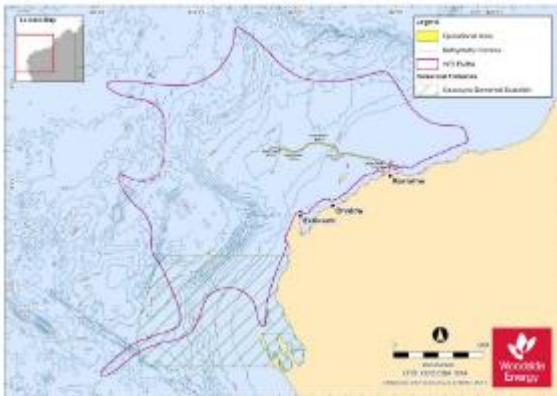
**Emsworth Gulf Prawn Managed Fishery**



**Shark Bay Crab Managed Fishery**



**Gaerroyne Demersal Scalefish Fishery**



**Shark Bay Prawn Managed Fishery**



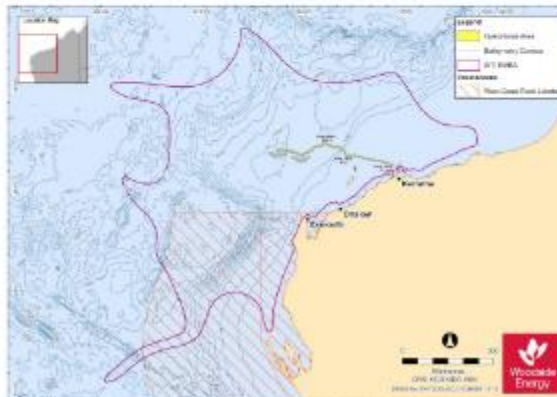
**Shark Bay Scallop Managed Fishery**



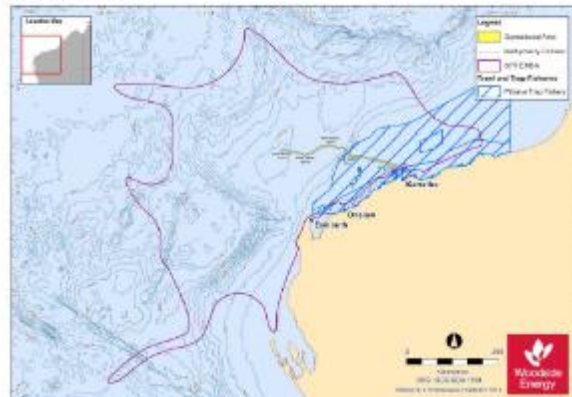
**Pilliga Trawl Fishery**

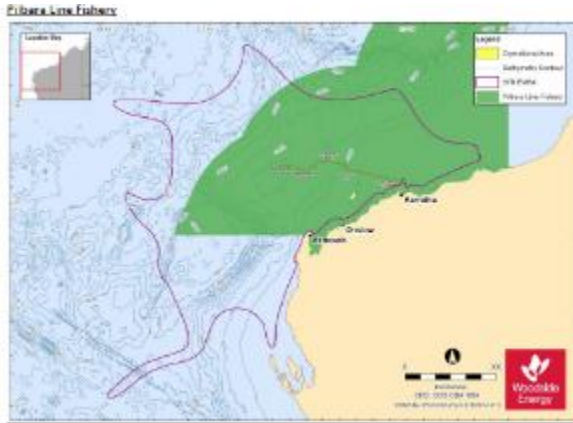


**West Coast Rock Lobster Managed Fishery**



**Pilliga Trap Fishery**





#### 4.31 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**);
- 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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.
<b>Location:</b>	Activities run from the Scarborough FPU in WA-61-L in	Activities are located in Permit Area WA-61-L in Commonwealth	The seismic survey will cover the Scarborough and	Activities are located in permit Areas WA-61-L and WA-62-L,



	Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	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.	Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	around 374 km west-northwest of Dampier, Western Australia.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>

	Park Habitat Protection Zone			
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>			
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

Scarborough Seabed Intervention and Trunkline Installation EP (SITIEP)

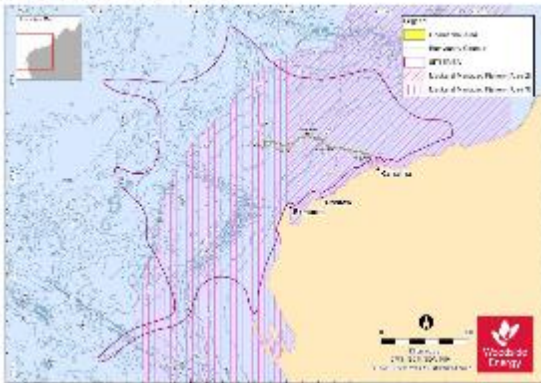
Map 1 - Southern Managed Fishery



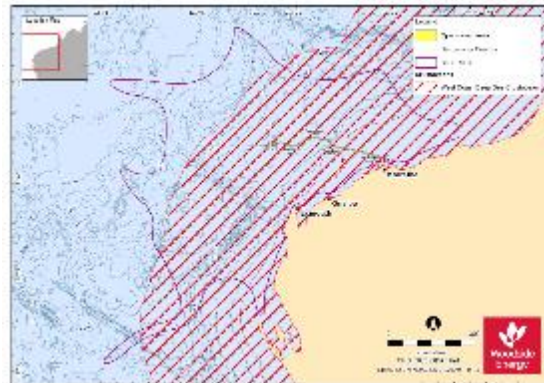
Eastern Cuck Managed Fishery



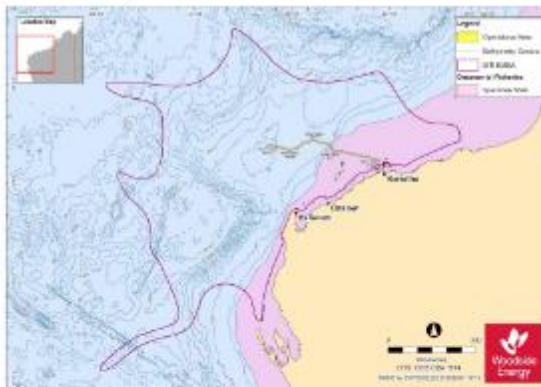
Midwest Managed Fishery (Area 2 only)



West Coast East Sea Continental Managed Fishery



Northwest Shell Fishery



North Sea Prawn Managed Fishery



Orkney Prawn Managed Fishery

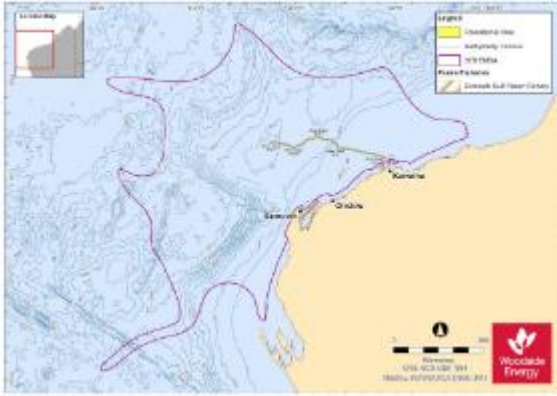


Western Australian Sea Cucumber Managed Fishery





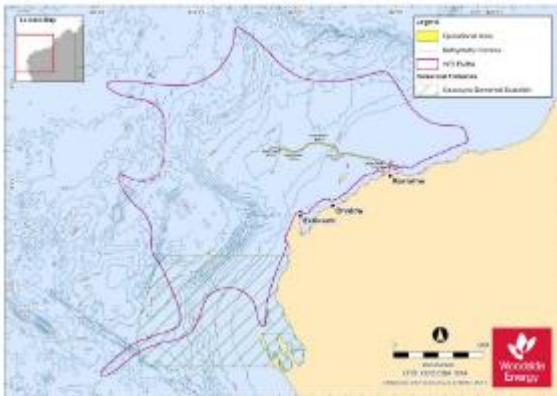
**Emsworth Gulf Prawn Managed Fishery**



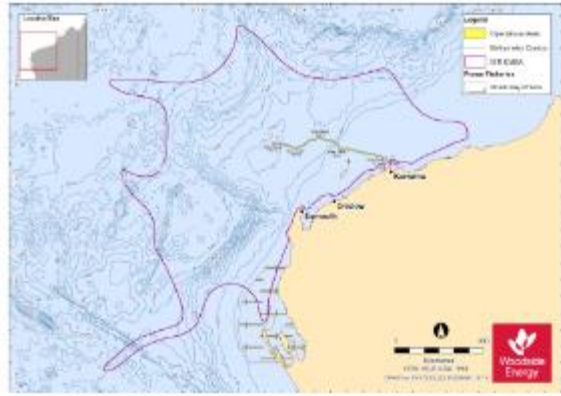
**Shark Bay Crab Managed Fishery**



**Gaeroyne Demersal Scalefish Fishery**



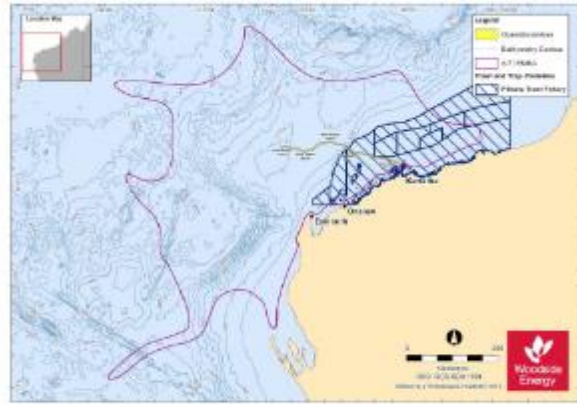
**Shark Bay Prawn Managed Fishery**



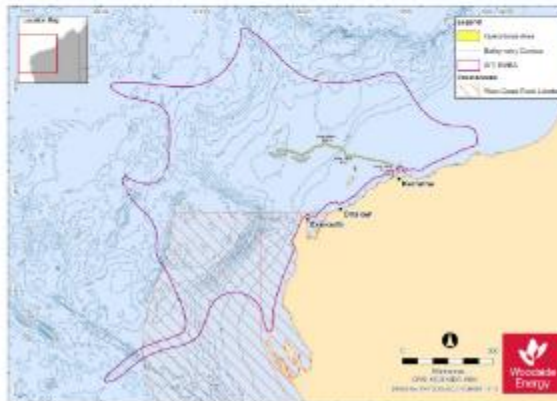
**Shark Bay Scallop Managed Fishery**



**Pilliga Trawl Fishery**



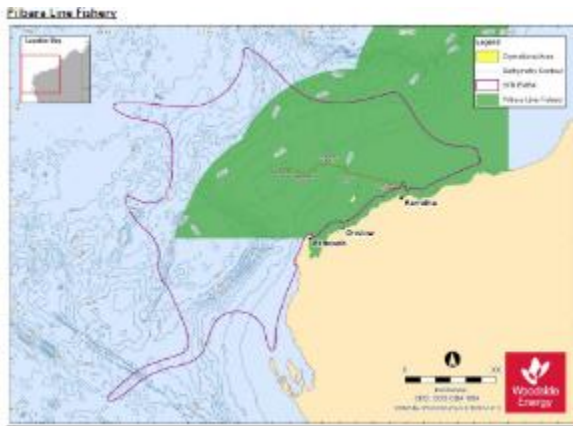
**West Coast Rock Lobster Managed Fishery**



**Pilliga Trap Fishery**







#### 4.32 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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>

<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>Subsea EP</b>

**4.33 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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.
<b>Location:</b>	Activities run from the Scarborough FPU in WA-61-L in	Activities are located in Permit Area WA-61-L in Commonwealth	The seismic survey will cover the Scarborough and	Activities are located in permit Areas WA-61-L and WA-62-L,

	Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	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.	Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	around 374 km west-northwest of Dampier, Western Australia.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwlth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>



	Park Habitat Protection Zone			
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>			
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**Feedback:**

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[Feedback@woodside.com.au](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.34 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

<p><b>Earliest commencement date:</b></p>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.</p>	<p>Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).</p>
<p><b>Estimated duration:</b></p>	<p>~24 months across multiple campaigns</p>	<p>~50 – 60 days per well</p>	<p>~55 – 70 days</p>	<p>~18 months (cumulative) for the survey and installation activities</p>
<p><b>Distance from Operational Area to nearest town</b></p>	<p>The closest Commonwealth section of the trunkline on the State waters boundary is ~32 km north-west of Dampier.</p>	<p>~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.</p>	<p>~214 km north-west of Exmouth.</p>	<p>~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.</p>
<p><b>Distance from Operational Area to nearest marine park</b></p>	<ul style="list-style-type: none"> <li>• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>• ~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• Trunkline Project Area: The proposed trunkline from around KP 32</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> </ul>

	<p>(Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline.</p> <ul style="list-style-type: none"> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<ul style="list-style-type: none"> <li>Moored MODU – 4,000 m radius from each well centre.</li> <li>Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<p>seismic vessel and third-party vessels</p> <ul style="list-style-type: none"> <li>Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<ul style="list-style-type: none"> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> <li>Anchor handling vessel/tug</li> <li>Pipe supply vessels</li> <li>Offshore construction vessel</li> <li>Survey vessels</li> <li>Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>Installation vessels for installing the subsea infrastructure</li> <li>Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>A purpose-built seismic vessel</li> <li>One support vessel</li> <li>A potential chase vessel, and</li> <li>An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

**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](mailto: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 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**.

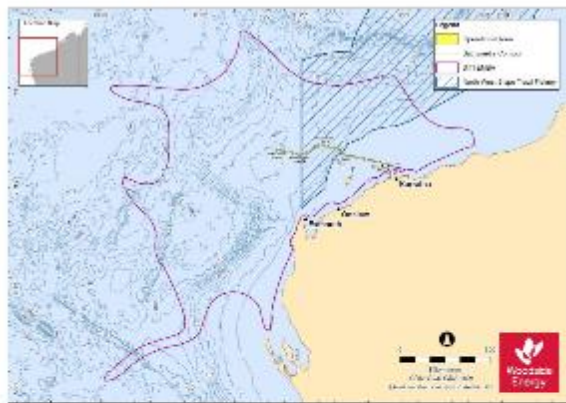
Regards,

**APPENDIX A**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

Scarborough Seabed Intervention and Trunkline Installation EP (SITI EP)

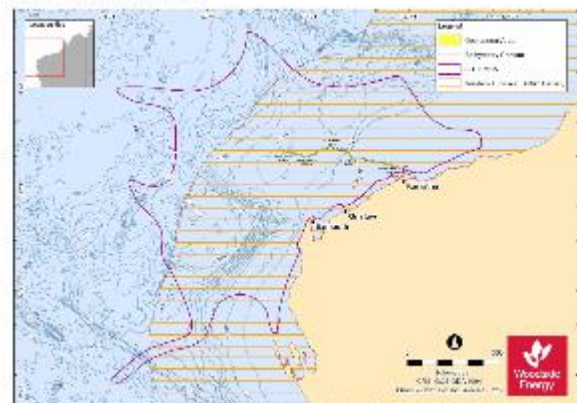
Both Wood Ship and Trawl Fisheries



Western Deepwater Trawl Fisheries



Western Tuna and Blinck Fishery





#### 4.35 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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

#### **Activity:**

	<b>SITI EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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	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

	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.	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>An interactive map showing the location of the proposed activities will be</li> </ul>

		available on the Woodside website and will be updated throughout the proposed activities
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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 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,

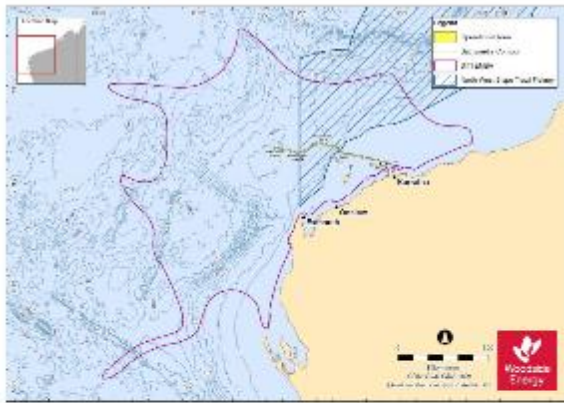
**APPENDIX A**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>Subsea EP</b>

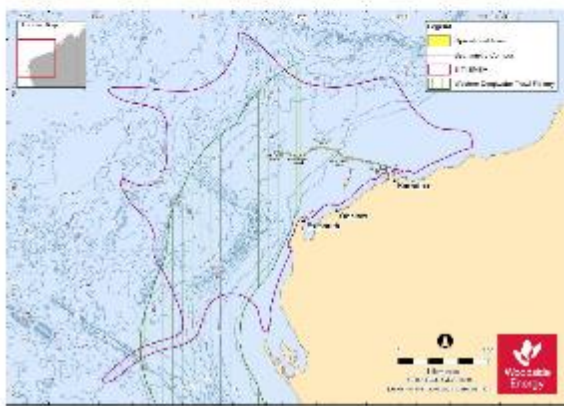


Scarborough Seabed Intervention and Trunkline Installation EP (SITI EP)

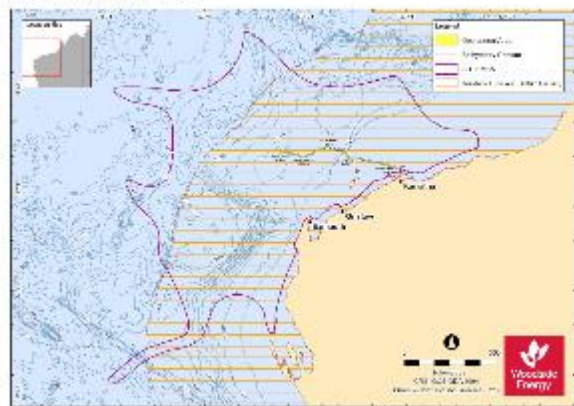
Both West Skuas and Trawl Fisheries



Western Deepwater Trawl Fishery



Western Tuna and Billfish Fishery



#### 4.36 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational</b>	The closest Commonwealth section of the trunkline on the State waters	~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

<b>Area to nearest town</b>	boundary is ~32 km north-west of Dampier.			west-northwest of Dampier.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~83 km north of the Gascoyne Marine Park (Cwlth)</li> <li>~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>DP MODU/drillship – 500 m radius from each well centre</li> <li>Moored MODU – 4,000 m radius from each well centre.</li> <li>Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> </ul>	<ul style="list-style-type: none"> <li>Installation vessels for installing the subsea infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>A purpose-built seismic vessel</li> <li>One support vessel</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>



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Scarborough Seabed Intervention and Trunkline Installation (SITIP)

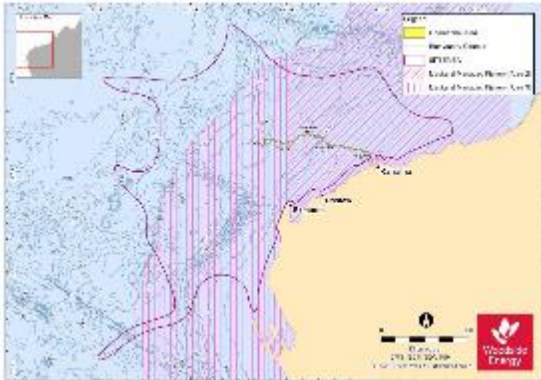
Map 15: Seabed Management Policy



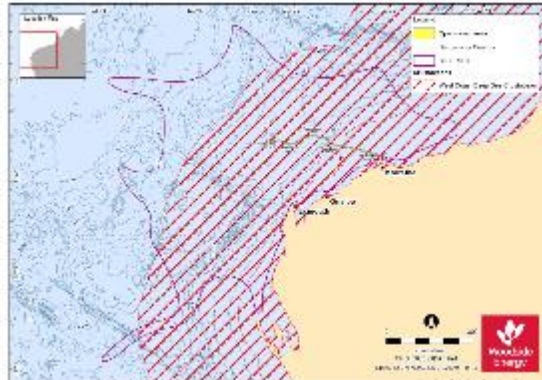
Map 16: Seabed Management Policy



Map 17: Seabed Management Policy



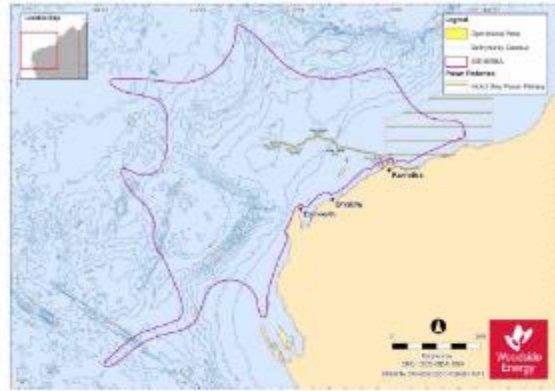
Map 18: Seabed Management Policy



**Sevenson Shell Fishery**



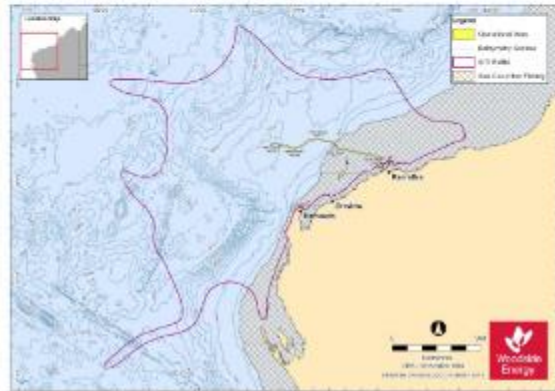
**Rickel Bay Prawn Managed Fishery**



**Dezlow Prawn Managed Fishery**



**Western Australian Sea Cucumber Managed Fishery**



**Kemuth Sulf Prawn Managed Fishery**



**Shark Bay Crab Managed Fishery**



**Gastropod Demersal Scalefish Fishery**



**Shark Bay Prawn Managed Fishery**

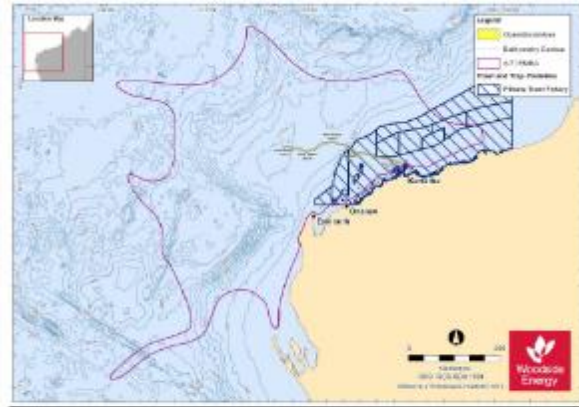




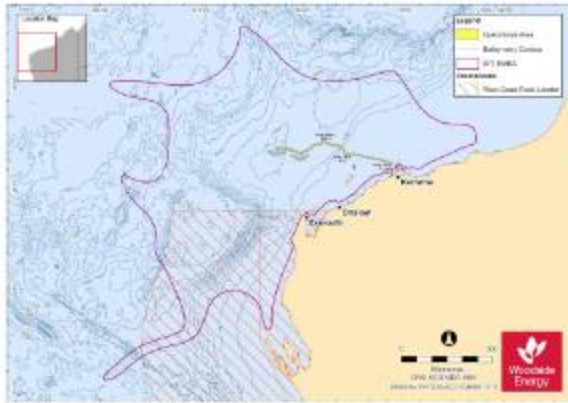
**Shark Bay Scallops Managed Fishery**



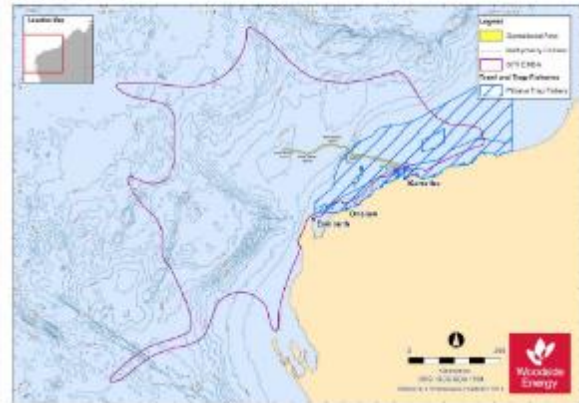
**Pilbara Trawl Fishery**



**West Coast Rock Lobster Managed Fishery**



**Pilbara Trap Fishery**



**Pilbara Line Fishery**



#### 4.37 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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 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 gravimetry survey is also planned.
<b>Location:</b>	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.

<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Support vessels</li> </ul>
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>Subsea EP</b>



Scarborough Seabed Intervention and Trunkline Installation EP (SITIEP)

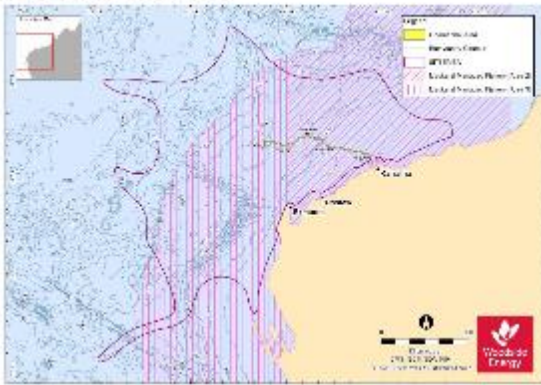
Map 1 - Southern Managed Fishery



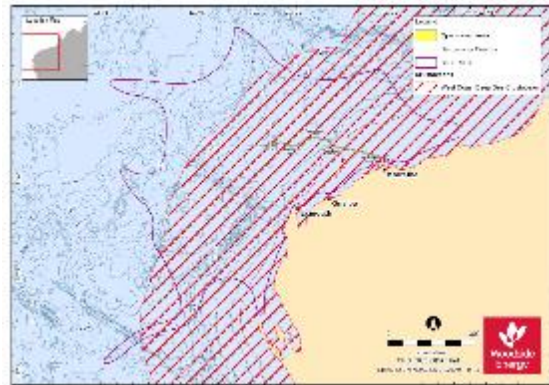
Eastern Gulf Managed Fishery



Middle West Coast Managed Fishery



West Coast East Sea District Managed Fishery



Sevenson Shell Fishery



Russell Bay Prawn Managed Fishery



Oscawa Prawn Managed Fishery

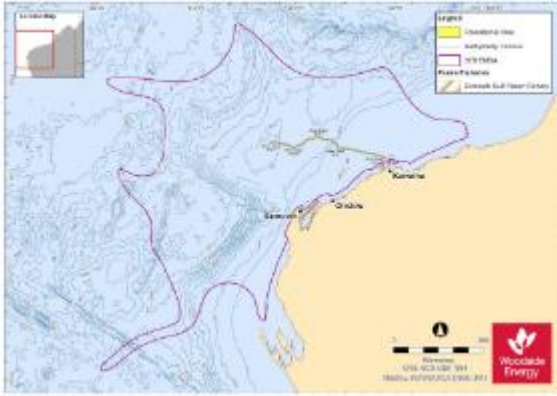


Western Australian Sea Country Managed Fishery





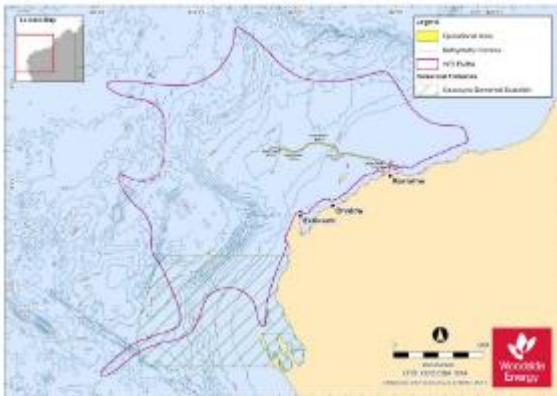
**Emsworth Gulf Prawn Managed Fishery**



**Shark Bay Crab Managed Fishery**



**Gaeroyne Demersal Scalefish Fishery**



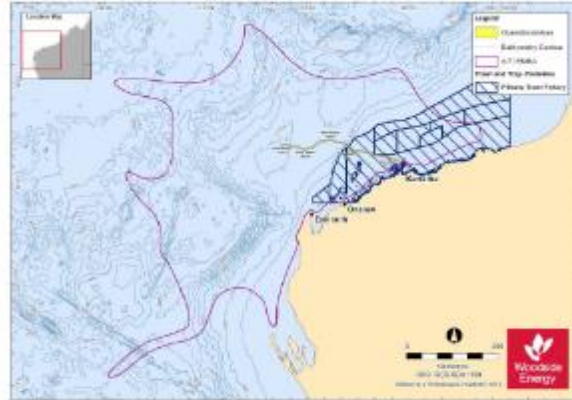
**Shark Bay Prawn Managed Fishery**



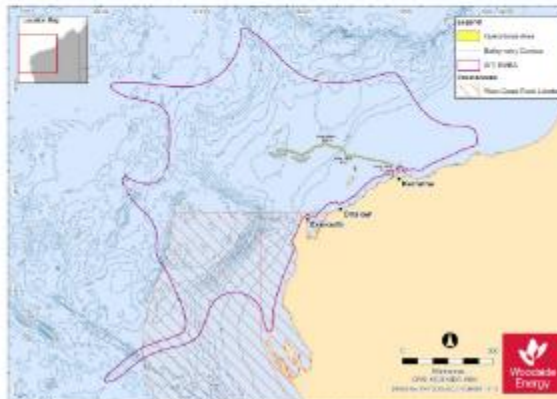
**Shark Bay Scallop Managed Fishery**



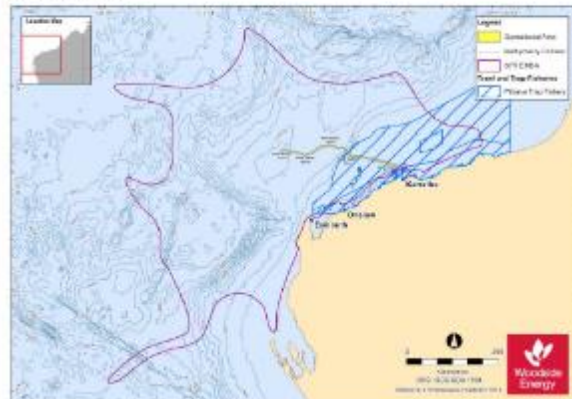
**Pilbara Trawl Fishery**

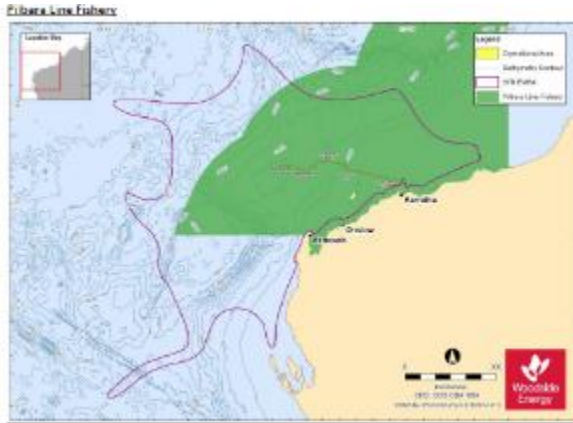


**West Coast Rock Lobster Managed Fishery**



**Pilbara Trap Fishery**





**4.38 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](mailto: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](http://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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**



	SITI EP	D&C EP	Seismic EP	Subsea EP
<b>Summary:</b>	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.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities



<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~83 km north of the Gascoyne Marine Park (Cwth)</li> <li>~206 km north-west of Montebello Marine Park (Cwth)</li> <li>~208 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>	<ul style="list-style-type: none"> <li>~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>DP MODU/drillship – 500 m radius from each well centre</li> <li>Moored MODU – 4,000 m radius from each well centre.</li> <li>Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>Three nautical mile radius safe navigation area around the seismic vessel, <u>streamers</u> and tail buoys during seismic operations</li> <li>Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> </ul>	<ul style="list-style-type: none"> <li>Installation vessels for installing the subsea infrastructure</li> <li>Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support</li> </ul>	<ul style="list-style-type: none"> <li>A purpose-built seismic vessel</li> <li>One support vessel</li> <li>A potential chase vessel, and</li> <li>An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	vessels		
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**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](mailto: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  
Kariak, 11 Mount Street  
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Australia

T: 1800 442 977  
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[www.woodside.com](http://www.woodside.com)  
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**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

Scarborough Seabed Intervention and Trunkline Installation EP (SITIEP)

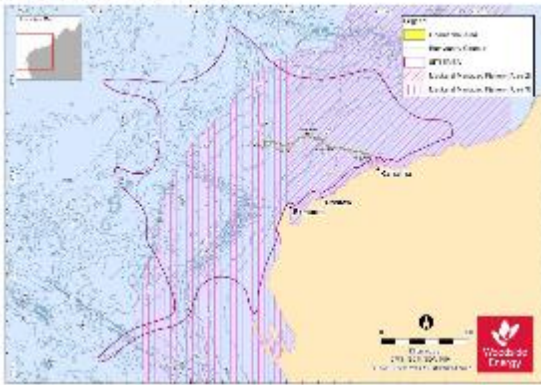
Map 1 - Southern Managed Fisheries



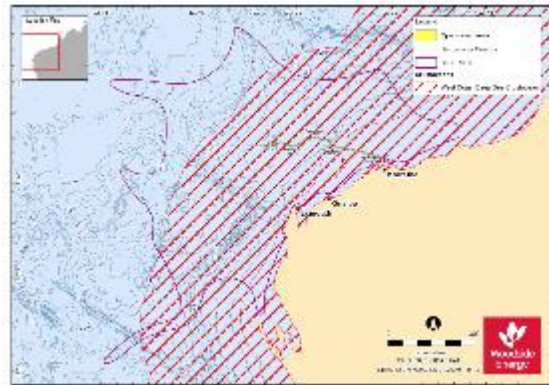
Eastern Gulf Managed Fishery



Middle West Coast Managed Fishery



West Coast Deep Sea Crustacean Managed Fishery



Deepwater Shell Fishery



Rickel Sea Prawn Managed Fishery



Oceanic Prawn Managed Fishery

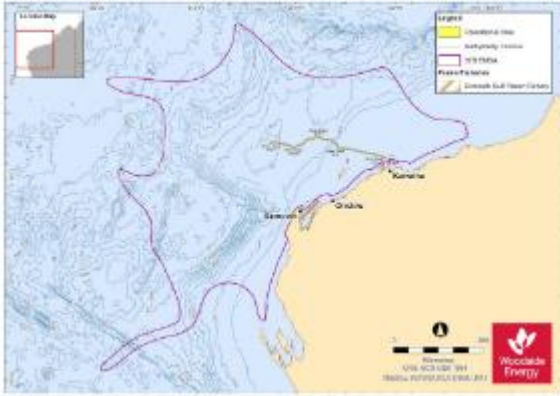


Western Australian Sea Cucumber Managed Fishery





**Emsworth Gulf Prawn Managed Fishery**



**Shark Bay Crab Managed Fishery**



**Gaeroyne Demersal Scalefish Fishery**



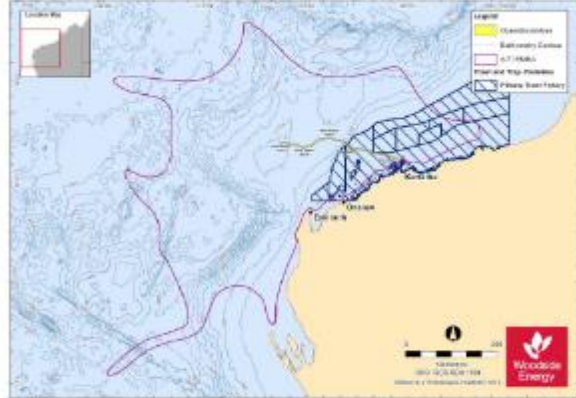
**Shark Bay Prawn Managed Fishery**



**Shark Bay Scallop Managed Fishery**



**Pilbara Trawl Fishery**

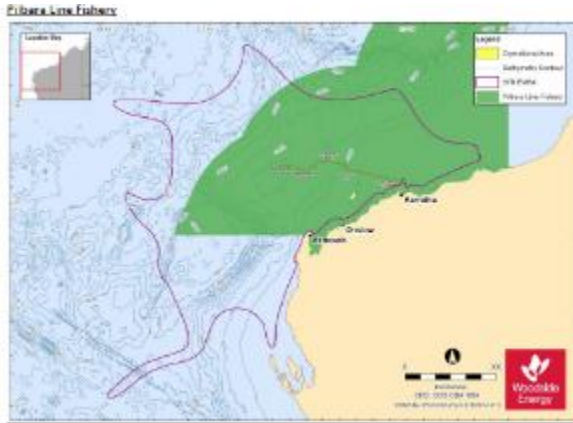


**West Coast Rock Lobster Managed Fishery**



**Pilbara Trap Fishery**





#### 4.39 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.**

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](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](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](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](#).

**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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

**Activity:**

	SITI EP	D&C EP	Seismic EP	Subsea EP
<b>Summary:</b>	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.



<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> </ul>	<ul style="list-style-type: none"> <li>~83 km north of the Gascoyne Marine Park (Cwth)</li> <li>~206 km north-west of Montebello Marine Park (Cwth)</li> <li>~208 km north-northwest of</li> </ul>	<ul style="list-style-type: none"> <li>~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> </ul>

	<ul style="list-style-type: none"> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	Ningaloo Marine Park (Cwlth)		<ul style="list-style-type: none"> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>



	<ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	supply/support vessels		
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>

**4.40 Email sent to UWA (6 February 2023)**

Dear ■■■

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 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,

#### **4.41 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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **8 March 2023**.

**Activity:**

	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>
<b>Summary:</b>	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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine</li> </ul>	<ul style="list-style-type: none"> <li>~83 km north of the Gascoyne Marine Park (Cwlth)</li> </ul>	<ul style="list-style-type: none"> <li>~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwlth)</li> </ul>

<p><b>Area to nearest marine park</b></p>	<p>Park – Multiple Use Zone (Cwth), close to the northern boundary</p> <ul style="list-style-type: none"> <li>• Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>• ~206 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~208 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>		<ul style="list-style-type: none"> <li>• ~ 201 km north-west of Montebello Marine Park (Cwlth)</li> <li>• ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)</li> </ul>
<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• DP MODU/drillship – 500 m radius from each well centre</li> <li>• Moored MODU – 4,000 m radius from each well centre.</li> <li>• Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Installation vessels for installing the subsea infrastructure</li> <li>• Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels</li> </ul>		
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**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](mailto: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 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**

<b>FEEDBACK</b>	<b>SITI EP</b>	<b>D&amp;C EP</b>	<b>Seismic EP</b>	<b>Subsea EP</b>



## 4.42 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](mailto:Feedback@woodside.com.au)

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](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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by 8 March 2023 2023.

**Activity:**



Woodside Energy Group Ltd  
ACN 004 886 952  
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11 Mount Street  
Perth WA 6000  
Australia  
T: +61 8 9348 4000  
[www.woodside.com](http://www.woodside.com)

	SITI EP	D&C EP	Seismic EP	Subsea EP
<b>Summary:</b>	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 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, <del>maintenance</del> 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 <del>gravimetry</del> survey is also planned.
<b>Location:</b>	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 <del>north west</del> 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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 800 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities



<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~83 km north of the Gascoyne Marine Park (Cwth)</li> <li>~206 km north-west of Montebello Marine Park (Cwth)</li> <li>~208 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>	<ul style="list-style-type: none"> <li>~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>DP MODU/drillship – 500 m radius from each well centre</li> <li>Moored MODU – 4,000 m radius from each well centre.</li> <li>Installation vessel – 1,500 m radius around subsea locations</li> </ul>	<ul style="list-style-type: none"> <li>Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> </ul>	<ul style="list-style-type: none"> <li>Installation vessels for installing the subsea infrastructure</li> <li>Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities</li> <li>Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support</li> </ul>	<ul style="list-style-type: none"> <li>A purpose-built seismic vessel</li> <li>One support vessel</li> <li>A potential chase vessel, and</li> <li>An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	vessels		
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**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](mailto: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  
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**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

**4.43 Letter sent to West Coast Rock Lobster Managed Fishery (723 Licence Holders), Shark Bay Scallop Managed Fishery (29 Licence Holders), Shark Bay Prawn Managed Fishery (18 Licence Holders), Shark Bay Crab Managed Fishery (31 Licence Holders), Exmouth Gulf Prawn Managed Fishery (15 Licence Holders), Pilbara Crab Managed Fishery (1 Licence Holder) (6 February 2023)**



Woodside Energy Group Ltd  
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[www.woodside.com](http://www.woodside.com)

Please direct all responses/queries to:  
 Woodside Feedback  
 T: 1800 442 977  
 E: [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au)

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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by 8 March 2023.

*Activity:*

	SITI EP	Subsea EP
<b>Summary:</b>	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 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 <del>gravimetry</del> survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	The Operational Area for activities includes a radius of: <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<b>Seabed intervention:</b> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <b>Trunkline installation:</b> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	
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**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](mailto: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  
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[www.woodside.com](http://www.woodside.com)  
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**APPENDIX A**

FEEDBACK	SITI EP

Attached: Consultation Information Sheets for the SITI EP, Fishery figures



Scarborough Seabed Intervention and Trunkline Installation EP (SITIEP)

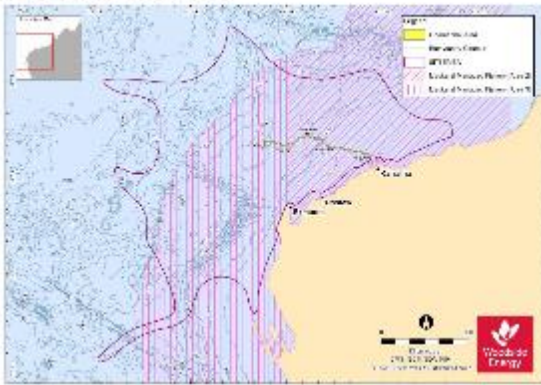
Map 1 - Southern Managed Fishery



Eastern Gulf Managed Fishery



Midwest Managed Fishery (Bait and Gulp)



West Coast Deep Sea Crustacean Managed Fishery



Deepwater Shell Fishery



Rickel Bay Prawn Managed Fishery



Oceania Prawn Managed Fishery

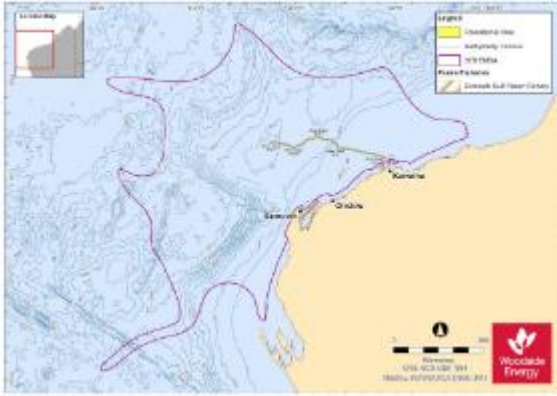


Western Australian Sea Cucumber Managed Fishery





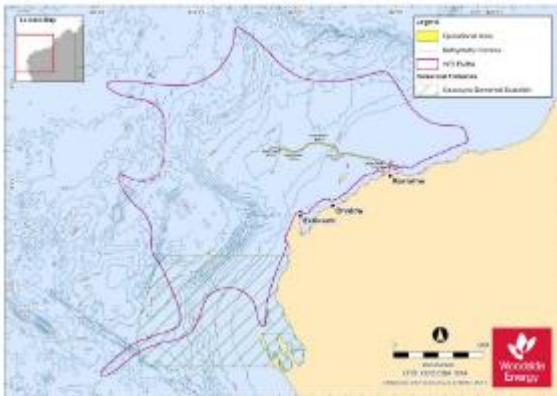
**Emsworth Gulf Prawn Managed Fishery**



**Shark Bay Crab Managed Fishery**



**Gaerroyne Demersal Scalefish Fishery**



**Shark Bay Prawn Managed Fishery**



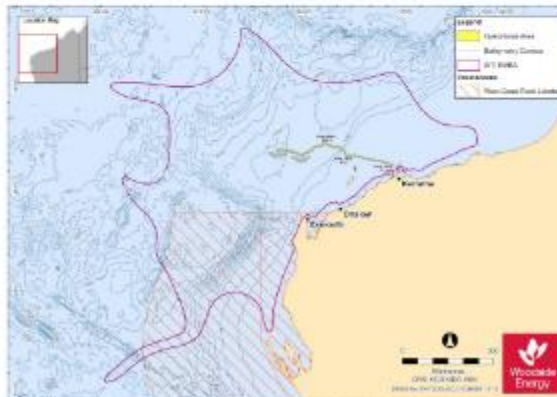
**Shark Bay Scallop Managed Fishery**



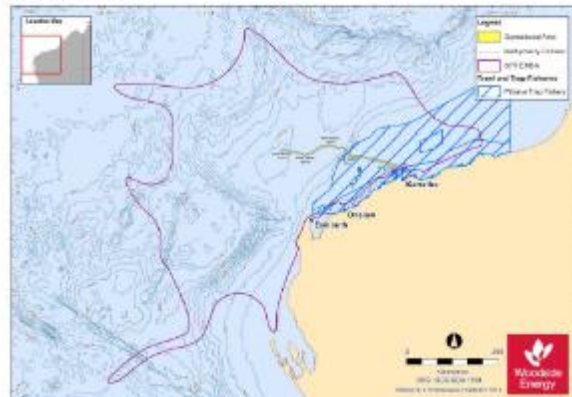
**Pilliga Trawl Fishery**

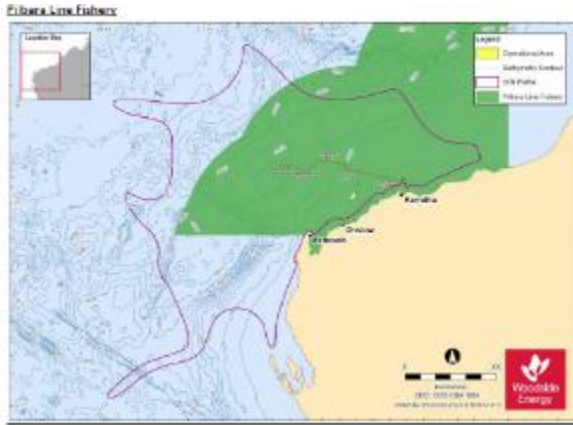


**West Coast Rock Lobster Managed Fishery**



**Pilliga Trap Fishery**





**4.44 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](mailto:Feedback@woodside.com.au)

Woodside Energy Group Ltd  
ACN 004 858 952  
Mia Yellagonga  
11 Mount Street  
Perth WA 6000  
Australia  
T: +61 8 9348 4000  
[www.woodside.com](http://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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by 8 March 2023.

**Activity:**

	SITI EP	Subsea EP
<b>Summary:</b>	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 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 <del>gravimetry</del> survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints. <b>Trunkline installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	The Operational Area for activities includes a radius of: <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<b>Seabed intervention:</b> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <b>Trunkline installation:</b> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	
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**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](mailto: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  
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[www.woodside.com](http://www.woodside.com)  
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**APPENDIX A**

FEEDBACK	SITI EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP and Subsea EP

**4.45 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)**



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[www.woodside.com](http://www.woodside.com)

Please direct all responses/queries to:  
 Woodside Feedback  
 T: 1800 442 977  
 E: [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au)

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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by 5 March 2023.

**Activity:**

	SITI EP	Subsea EP
<b>Summary:</b>	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 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 gravimetry survey is also planned.
<b>Location:</b>	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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<p><b>Seabed intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.</p> <p><b>Trunkline installation activities:</b> Q4 2023 pending successful completion approvals, vessel availability and weather constraints.</p>	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>
<b>Operational Area and Exclusion Zones</b>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>1,000 m around location of the outermost concrete pads.</li> <li>1,500 m around location of subsea infrastructure.</li> <li>2,000 m around future location of FPU.</li> <li>Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>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</li> </ul>
<b>Vessels:</b>	<p><b>Seabed intervention:</b></p> <ul style="list-style-type: none"> <li>Trailing suction hopper dredge</li> <li>Offshore construction vessel</li> <li>Rock Installation Vessel</li> <li>Survey vessels</li> <li>Support vessels</li> <li>Fuel bunkering vessels</li> </ul> <p><b>Trunkline installation:</b></p> <ul style="list-style-type: none"> <li>Pipelay Vessel multi-joint operation</li> <li>Shallow Water Lay Barge</li> </ul>	<ul style="list-style-type: none"> <li>Light construction vessels</li> <li>Heavy construction vessels</li> <li>Heavy lift vessels</li> <li>Derrick lay vessel</li> <li>Reel-lay vessels</li> <li>Survey vessels</li> <li>Support vessels</li> </ul>

	<ul style="list-style-type: none"> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	
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**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](mailto: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  
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**APPENDIX A**

FEEDBACK	SITI EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP and Subsea EP



Scarborough Seabed Intervention and Trunkline Installation EP (SITIEP)

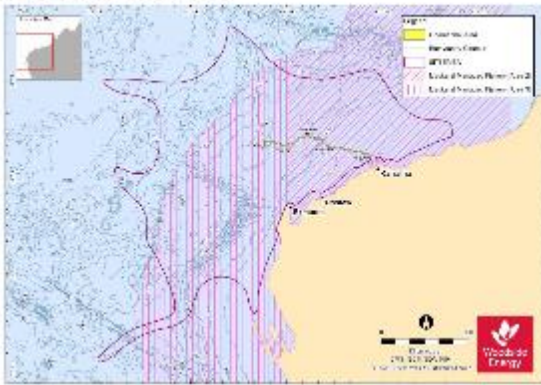
Map 1 - Southern Managed Fishery



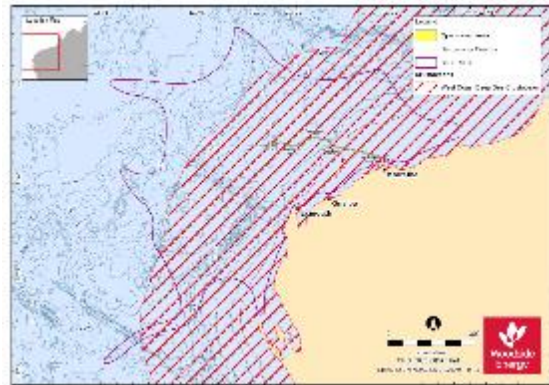
Eastern Gulf Managed Fishery



Midwest Managed Fishery (Bays of Fundy)



West Coast East Sea District Managed Fishery



Baymen Shell Fishery



Rickel Bay Prawn Managed Fishery



Oxbow Prawn Managed Fishery

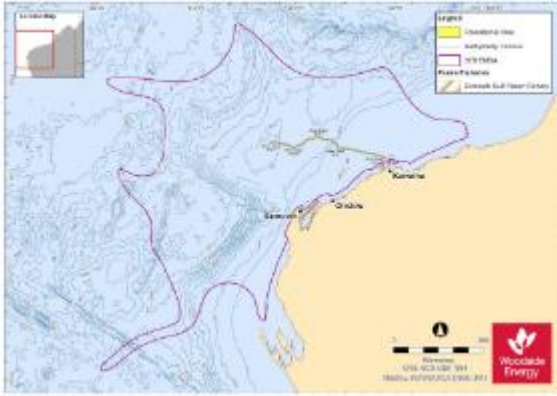


Western Australian Sea Country Managed Fishery





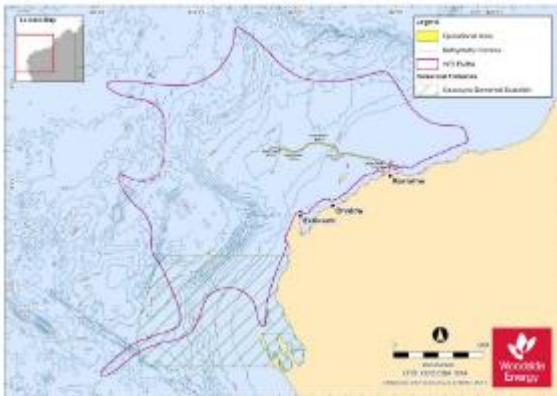
**Emsworth Gulf Prawn Managed Fishery**



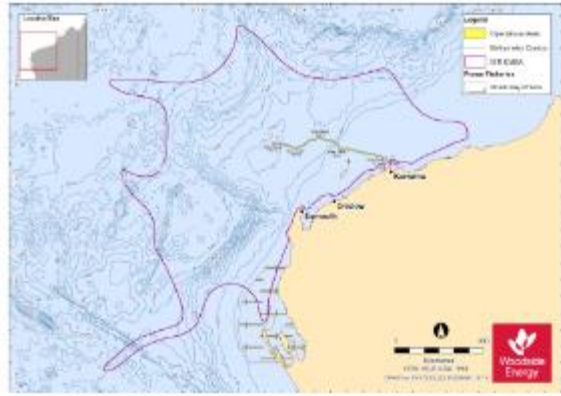
**Shark Bay Crab Managed Fishery**



**Gaeroyne Demersal Scalefish Fishery**



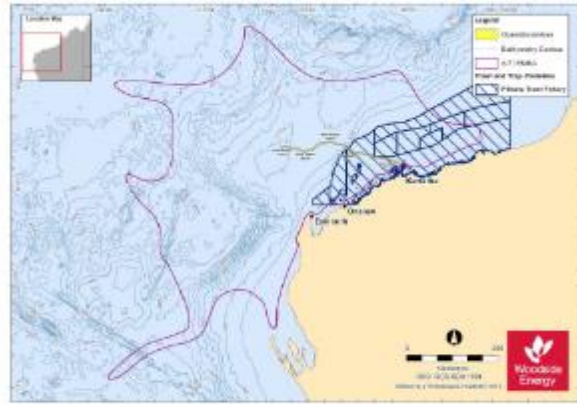
**Shark Bay Prawn Managed Fishery**



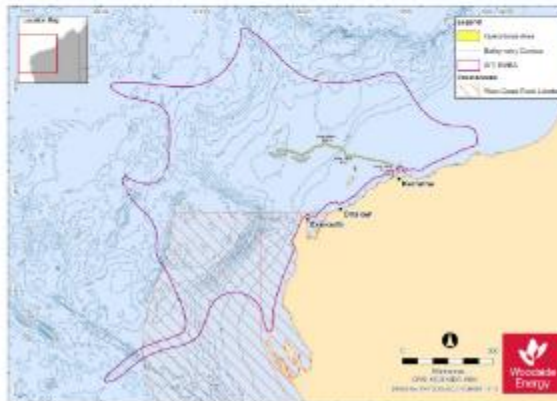
**Shark Bay Scallop Managed Fishery**



**Pilbara Trawl Fishery**



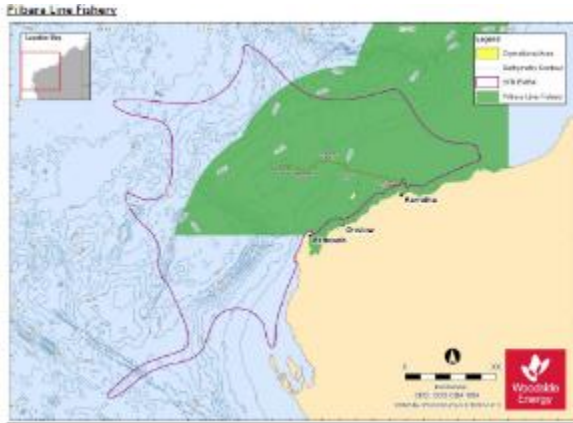
**West Coast Rock Lobster Managed Fishery**



**Pilbara Trap Fishery**







## 5 CONSULTATION FOLLOW UP (FEBRUARY 2023)

### 5.1 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,

### 5.2 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,AIMS

### 5.3 Email sent to Western Australian Marine Science Institution (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

**5.4 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,

**5.5 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,

**5.6 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.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

**5.7 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.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

## 5.8 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](mailto:Feedback@woodside.com.au)

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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **5 March 2023**.

Kind regards,

**Woodside Feedback**



**Woodside Energy Group Ltd**  
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[www.woodside.com](http://www.woodside.com)

## 5.9 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](mailto:Feedback@woodside.com.au)



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[www.woodside.com](http://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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **8 March 2023**.

Kind regards,

#### Woodside Feedback



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Mia Yellagonga  
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T: 1800 442 977  
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[www.woodside.com](http://www.woodside.com)

### 5.10 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,

**5.11 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,

**5.12 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,

**5.13 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,

**5.14 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,

### 5.15 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,

### 5.16 Email sent to Karratha Community Liaison Group (including City of Karratha) (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,

### 5.17 Email sent to Exmouth Community Reference Group (ECRG) (including Shire of Exmouth) (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,

### 5.18 Email sent to Ningaloo Coast World Heritage Advisory Committee (NCWHAC) (22 February 2023)

Dear [REDACTED] / Ningaloo Coast World Heritage Advisory Committee

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

**5.19 Email sent to Jadestone, Coastal Oil and Gas, Bounty Oil and Gas, Vermilion Oil and Gas, KATO Energy (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 Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

**5.20 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,

**5.21 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,

**5.22 Email sent to Shire of Ashburton (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 Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

### **5.23 Email sent to Town of Port Hedland (22 February 2023)**

Dear Town of Port Hedland

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

### **5.24 Email sent to Shire of Carnarvon (22 February 2023)**

Dear Shire of Carnarvon

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

### **5.25 Email sent to Onslow Chamber of Commerce and Industry (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 Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

### **5.26 Email sent to Port Hedland Chamber of Commerce and Industry (22 February 2023)**

Dear Port Hedland Chamber of Commerce and Industry

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,



### **5.27 Email sent to Carnarvon Chamber of Commerce and Industry (22 February 2023)**

Dear Carnarvon Chamber

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

### **5.28 Email sent to Cape Conservation Group (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 Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

### **5.29 Email sent to Protect Ningaloo (22 February 2023)**

Dear Protect Ningaloo

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

### **5.30 Letter sent to West Coast Rock Lobster Managed Fishery (723 Licence Holders), Shark Bay Scallop Managed Fishery (29 Licence Holders), Shark Bay Prawn Managed Fishery (18 Licence Holders), Shark Bay Crab Managed Fishery (31**

**Licence Holders), Exmouth Gulf Prawn Managed Fishery (15 Licence Holders),  
Pilbara Crab Managed Fishery (1 Licence Holder) (22 February 2023)**

Please direct all responses/queries to:  
Woodside Feedback  
T: 1800 442 977  
E: [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au)

22 February 2023



Woodside Energy Group Ltd  
ACN 004 888 962  
Mia Yellagonga  
11 Mount Street  
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Australia  
T: +61 8 9348 4000  
[www.woodside.com](http://www.woodside.com)

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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **8 March 2023**.

Kind regards,

**Woodside Feedback**



Woodside Energy  
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**5.31 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,

**5.32 Email sent to Western Australian Museum (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,

**5.33 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,

**5.34 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,

**5.35 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,

**5.36 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)**



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Please direct all responses/queries to:  
Woodside Feedback  
T: 1800 442 977  
E: [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au)

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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **8 March 2023**.

Kind regards,

**Woodside Feedback**



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### 5.37 Letter sent to Pilbara/Kimberley Recreational Marine Users (95 Licence Holders) (22 February 2023)



Please direct all responses/queries to:  
Woodside Feedback  
T: 1800 442 977  
E: [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au)

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[www.woodside.com](http://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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **8 March 2023**.

Kind regards,

**Woodside Feedback**



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### 5.38 Email sent to INPEX Alpha (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,

## 5.39 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](mailto:Feedback@woodside.com.au)

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](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](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](mailto:Feedback@woodside.com.au) or 1800 442 977 by **8 March 2023** |

**Activity:**



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	SITI EP	Seismic EP	Subsea EP
<b>Summary:</b>	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 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 gravimetry survey is also planned.
<b>Location:</b>	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 <u>north west</u> 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.
<b>Approx. Water Depth (m):</b>	~ 32 m – 1400 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
<b>Earliest commencement date:</b>	<b>Seabed Intervention activities:</b> Mid 2023 pending approvals, vessel availability and weather constraints.  <b>Trunkline Installation activities:</b> 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).
<b>Estimated duration:</b>	~24 months across multiple campaigns	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
<b>Distance from Operational Area to nearest town</b>	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.
<b>Distance from Operational Area to nearest marine park</b>	<ul style="list-style-type: none"> <li>The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary</li> <li>Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone</li> </ul>	<ul style="list-style-type: none"> <li>~46 km north of Gascoyne Marine Park Multiple Use Zone</li> </ul>	<ul style="list-style-type: none"> <li>~ 77 km north of the Gascoyne Marine Park (Cwth)</li> <li>~ 201 km north-west of Montebello Marine Park (Cwth)</li> <li>~ 180 km north-northwest of Ningaloo Marine Park (Cwth)</li> </ul>



<p><b>Operational Area and Exclusion Zones</b></p>	<p>Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.</p> <p>The Operational Areas are:</p> <ul style="list-style-type: none"> <li>• <b>Trunkline Project Area:</b> The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline.</li> <li>• <b>Offshore Borrow Ground Project Area:</b> Offshore Borrow Ground located in Commonwealth waters.</li> </ul>	<ul style="list-style-type: none"> <li>• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations</li> <li>• Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels</li> <li>• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points</li> </ul>	<p>The Operational Area for activities includes a radius of:</p> <ul style="list-style-type: none"> <li>• 1,000 m around location of the outermost concrete pads.</li> <li>• 1,500 m around location of subsea infrastructure.</li> <li>• 2,000 m around future location of FPU.</li> <li>• Temporary 500 m exclusion zone around vessels to manage vessel movements</li> <li>• 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</li> </ul>
<p><b>Vessels:</b></p>	<p><b>Seabed Intervention:</b></p> <ul style="list-style-type: none"> <li>• Trailing suction hopper dredge</li> <li>• Offshore construction vessel</li> <li>• Rock Installation Vessel</li> <li>• Survey vessels</li> <li>• Support vessels</li> <li>• Fuel bunkering vessels</li> </ul> <p><b>Trunkline Installation:</b></p> <ul style="list-style-type: none"> <li>• Pipelay Vessel multi-joint operation</li> <li>• Shallow Water Lay Barge</li> <li>• Anchor handling vessel/tug</li> <li>• Pipe supply vessels</li> <li>• Offshore construction vessel</li> <li>• Survey vessels</li> <li>• Fuel bunkering vessels</li> </ul>	<ul style="list-style-type: none"> <li>• A purpose-built seismic vessel</li> <li>• One support vessel</li> <li>• A potential chase vessel, and</li> <li>• An additional spotter vessel (May to June)</li> </ul>	<ul style="list-style-type: none"> <li>• Light construction vessels</li> <li>• Heavy construction vessels</li> <li>• Heavy lift vessels</li> <li>• Derrick lay vessel</li> <li>• Reel-lay vessels</li> <li>• Survey vessels</li> <li>• Support vessels</li> </ul>

**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](mailto: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  
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**APPENDIX A**

FEEDBACK	SITI EP	Seismic EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP, Seismic EP and Subsea EP

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**5.40 Email sent to JX Nippon via ENEOS (23 February 2023)**

Good Afternoon ██████████,

My name is ██████████, 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](mailto:Feedback@woodside.com.au) and my email, ██████████@woodside.com.au in the correspondence.

Please contact me on ██████████ or reply to this email if you require any clarification.

Kind Regards,

**5.41 Email sent to Pilbara Ports Authority (22 February 2023)**

Dear ██████████ and ██████████

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**). 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,

## 5.42 Email sent to Wanparta Aboriginal Corporation (24 February 2023)

Hello [REDACTED]

In follow up to your email received on 31 January please let me know if you have received any questions from the Wanparta Directors regarding the Environmental Plan (EP) information shared with you to date for Scarborough and Nganhurra RTM.

This email provides further information on Woodside's decommissioning and drilling activities that we are seeking to understand if Wanparta has any interests in the Environment that may be affected (EMBA) relative to the attached information sheets and if Wanparta would like us to consult further on these EPs.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking Wanparta's feedback as soon as possible, Woodside is also seeking Wanparta'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. Plug and abandonment (P&A) of the wells.
  - [consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf \(woodside.com\)](#)
- Griffin decommissioning.
  - [consultation-information-sheet---griffin-decommissioning-environment-plans.pdf \(woodside.com\)](#)

### Drilling Activities:

- 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 \(woodside.com\)](#)

If there is anything else, Woodside can do at this time to facilitate consultation, if Wanparta make an assessment that this is required to provide more information about these planned work activities, please let me know.

Thank you for your time in considering these matters

Please feel free to contact me on the details below if you require further information or assistance

Kind regards

### 5.43 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 Nganhurra 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]

#### 5.44 Email sent to Wirrawandi Aboriginal Corporation (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 Nganhurra 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]

#### 5.45 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

██████████

**5.46 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) (24 February 2023)**

Hello ██████████

I understand you met with ██████████ on 31 January regarding the Environmental Plan (EP) information shared with Robe River Kuruma Aboriginal Corporation (RRKAC) for the Scarborough project activity and Nganhurra RTM and that this information was to be

presented at the RRKAC Board meeting this week 21-22 February. Ju-Lin 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

██████████

#### 5.47 Email to MAC – 24 February 2023

Wayiba ██████████



I understand that you met with Woodside on Monday 20 February to further discuss the information shared to date on the Nganhurra 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

██████████

**5.48 Updated Shipping Lane Maps sent to Australian Hydrographic Office (AHO) and to Australian Maritime Safety Authority (AMSA) (included via a response on a separate Environment Plan) – 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



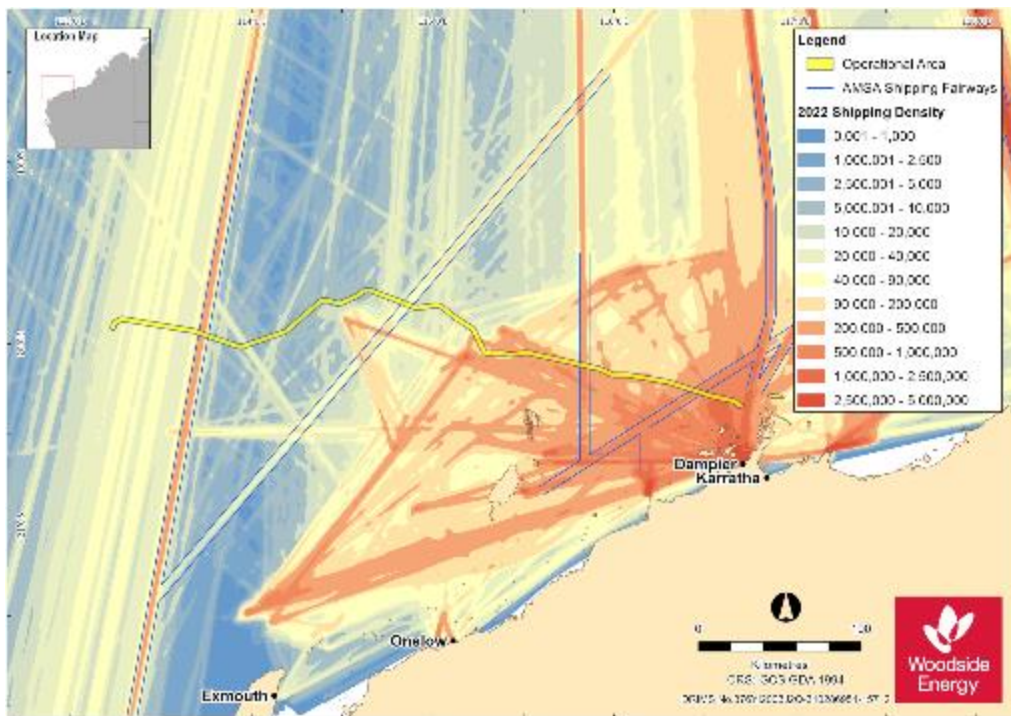
attached. A separate figure showing the Environment that May Be Affected (EMBA) for each activity has also been attached for reference.

Please let us know should you have any questions regarding the attached or require further information relating to any of the Scarborough activities.

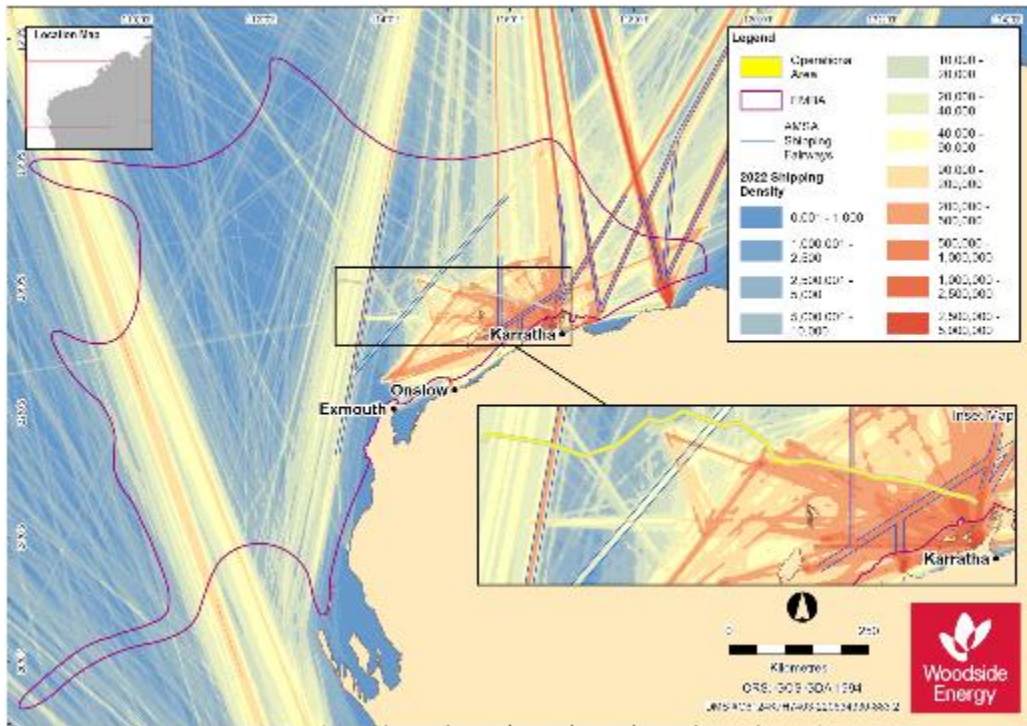
Kind Regards,

Woodside Feedback

## Operational Area



## EMBA



#### 5.49 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](mailto: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

#### **5.50 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 ordnances (UXOs).

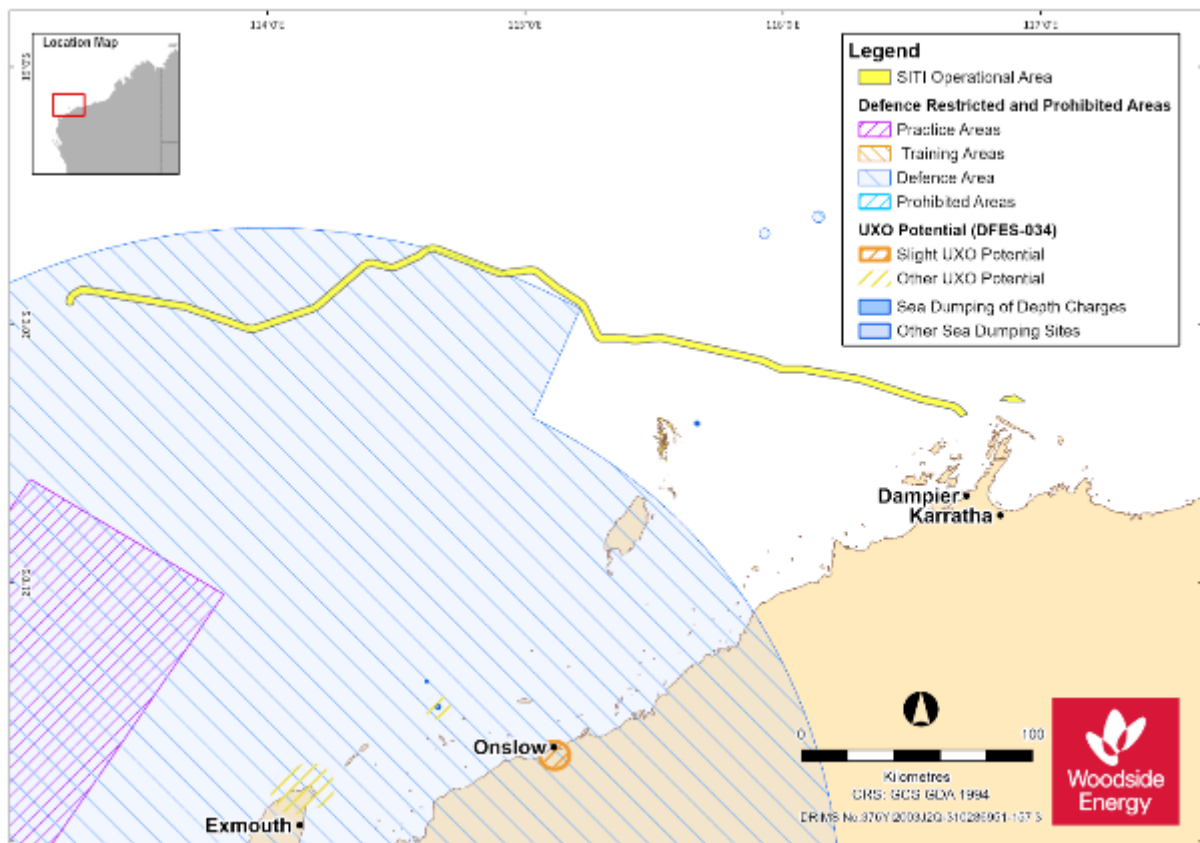
Please accept this as confirmation that:

- 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.

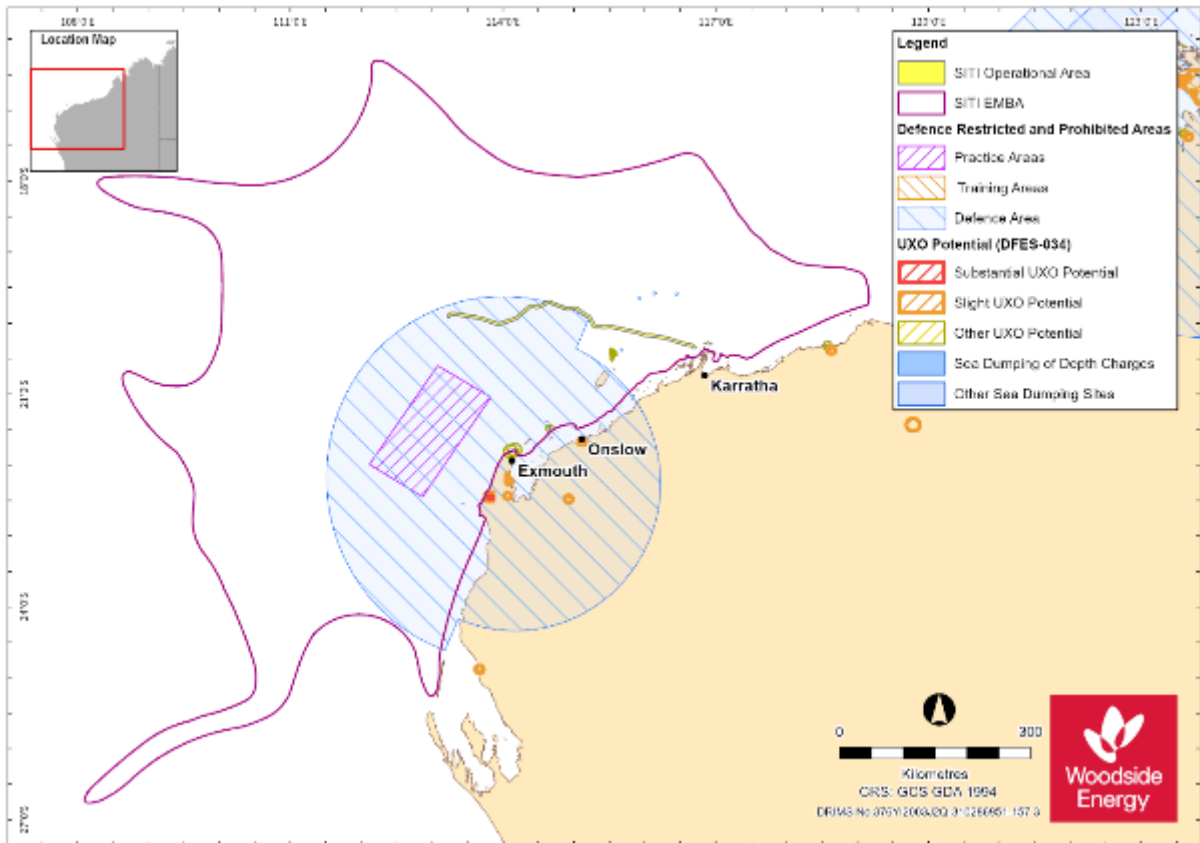
The Defence figures for each of the proposed EPs as relevant to their Petroleum Activities Program and associated Operational Areas is attached. A separate figure showing the Environment that May Be Affected (EMBA) is also attached for reference.

Kind regards,

Woodside Feedback







**5.51 Email sent to Western Rock Lobster Council (1 March 2023)**

Hi [REDACTED]

Thank you for coming back to us.

Please find the attached Consultation Information Sheets relating to the below proposed environment plans (EPs) and requested feedback dates. 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](#).

I confirm that Woodside has provided this consultation information to Western Rock Lobster Fishery licence holders directly via post using DPIRD provided contact information. Woodside welcomes the Western Rock Lobster Council’s offer to provide consultation information to members directly as well.

Should members and/or the Western Rock Lobster Council have feedback on the proposed activities, we would welcome this by the feedback dates below. Feedback received after this date will continue to be assessed and responded to, as required, through the life of the relevant EP.

Feedback by 20 March 2023

- Seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the **Scarborough Seabed Intervention and Trunkline Installation EP** for the Scarborough development.
- Decommissioning of the Nganhurra RTM under the **Nganhurra Operations Cessation Environment Plan revision**.

Feedback by 25 March 2023

- 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**.
- 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**.
- 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**.

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.

Please reach out if you have any questions.

Kind regards,

██████████

**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](mailto: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.

**APPENDIX A**

<b>FEEDBACK</b>	<b>Scarborough SITI EP</b>	<b>Nganhurra RTM EP</b>	<b>Griffin EPs</b>	<b>Stybarrow EPs</b>	<b>Julimar EP</b>	<b>PLA08 EP</b>


### 5.52 Email sent to Western Rock Lobster Council (14 March 2023)

Hi [REDACTED],

I hope your week is going well.

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 in Commonwealth waters. Please see our consultation email below.

#### Feedback by 20 March 2023

- Seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the **Scarborough Seabed Intervention and Trunkline Installation EP** for the Scarborough development.
- Decommissioning of the Nganhurra RTM under the **Nganhurra Operations Cessation Environment Plan revision**.

#### Feedback by 25 March 2023

- 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**.
- 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**.
- 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**.

In an effort to simplify feedback, we have included a feedback template (**Appendix A**) which you may wish to use to provide your feedback specific to the proposed EPs.

We would appreciate any feedback you may have by the above feedback dates to support the development of our Environment Plans.

Kind regards,

[REDACTED]

### 5.53 Email and letter sent to Wirrawandi Aboriginal Corporation (WAC) – 3 May 2023

Good morning [REDACTED]

Please find attached a letter in follow-up to the meeting held with the Wirrawandi Aboriginal Corporation Directors and Elders in Perth on the 23<sup>rd</sup> March.

I look forward to connecting soon.

Kind regards

[Redacted signature block]





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](http://www.woodside.com)

Our reference: [REDACTED]

03 May 2023

[REDACTED]  
Wirrawandi Aboriginal Corporation  
Karratha Village  
Shop 50, 5-15 Sharpe Ave  
Karratha WA 6714

Dear [REDACTED]

**MEETING 23 MARCH 2023 - TO DISCUSS ENVIRONMENT PLAN CONSULTATION WITH THE WIRRAWANDI ABORIGINAL CORPORATION DIRECTORS AND ELDERS**

Thank you for the opportunity to meet with you, your team and the Directors and Elders on the 23rd March 2023 at the Exchange Tower in Perth. We appreciated the engagement and careful consideration of the matters presented at the meeting. Your support in enabling the opportunity is gratefully received, and we look forward to continuing to work with the Wirrawandi Aboriginal Corporation (WAC).

Firstly, Woodside acknowledges and respects that the WAC has interests in the Environment That May Be Affected (EMBA) by Woodside's Activities and wants to work so that impacts to these values and interests are as minimal as is reasonably practicable.

To this end Woodside presented the following at the meeting:

**An Overview:**

- About Woodside Energy (including area of operations, history and recent merger with BHP Petroleum)
- Environment Plans (including the Environment that may be Affected, Planned and Unplanned Risks)

**Activity Overview and Discussion:**

- Decommissioning Activities (covering Nganhurra RTM, Griffin and Stybarrow)
- Scarborough Project activities (covering field, trunkline, drilling and completions, subsea installation and seismic survey)
- Drill rig activities (covering Pluto, Julimar and TPA03)

**Woodside and the Community**

- Social impact Assessment
- Stakeholders Engaged

**Future Relationship and Engagement**

It was encouraging that during the face-to-face engagement the WAC directors and elders were actively engaged and requested further information or clarification on topics related to the proposed activities which we discussed and responded to during the meeting:

More specifically Woodside took a number of actions to follow up on as follows:

- WAC asked for more community information on rock art,

**Response:** Woodside has been providing information and briefings through a number of forums such as through the Murujuga Aboriginal Corporation and quarterly heritage meetings and are open

to feedback on this. Woodside will work with WAC on appropriate way to share information (eg via an agreed communications plan)

- WAC asked about Woodside activities near Dongara, noting that there was a sign beside the highway. Woodside responded that none of the present attendees were aware of these activities and an action was noted to provide an answer.

**Response:** Although Woodside has started exploring potential carbon sequestration (greenhouse offset) opportunities in the area we have no known current advertising campaigns in the area and no other known activity has been identified.

- WAC stated that Indigenous employment plans are not always effective. Woodside responded that there are specific actions being taken with regard to continually improving Employment and Training and Contracting and Procurement (C&P) strategies, one such example is supporting Tender Relief to support smaller businesses to navigate and prepare tender submissions. Woodside took an action to have our local Karratha based C&P representative engage with WAC for further discussion;

**Response:** [REDACTED] coordinated a meeting with C&P representatives held in Perth on 29th March. Further local engagement can be scheduled once dates are provided for when you are next in Karratha so we can set up a meeting to continue the conversation on the opportunities discussed and what other opportunities may be possible in the future

- WAC asked if the elders and board group could have a site tour, an action was taken to collaborate with WAC to explore this opportunity.

**Response:** [REDACTED] to connect with WAC to understand timeframes, who will be likely to attend in order to plan logistics and coordinate an opportunity accordingly.

Please note that the meeting of 23rd March and this response will be included in our Environment Plans (EPs) for the proposed activities 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).

If you are providing feedback to us following this meeting, please inform us of any sensitive information, and we will make this known to NOPSEMA upon submission of the EPs to ensure this information remains confidential to NOPSEMA.

During the meeting WAC expressed a desire for continuing engagement and partnership. Woodside is committed to continuing consultation with Traditional Custodians beyond the submission of Environment Plans and this will not be WAC's only opportunity to engage with us.

We look forward to meeting with you to discuss these matters further, and so we can discuss putting in place the support that WAC seeks to continue engagement. Thank you again for providing us with the opportunity to present to WAC, your questions and for your careful consideration of the matters provided.

Please feel free to contact me, or alternatively [REDACTED] at [REDACTED]@woodside.com.

Sincerely

Via email

[REDACTED]

Copy: feedback@woodside.com

**5.54 Email and letter sent to Wirrawandi Aboriginal Corporation (WAC) – 3 May 2023**

Good morning [REDACTED]

Please find attached a letter following the joint Heritage Advisory Committee meeting held on 31 March 2023.

I look forward to connecting soon.

Kind regards

[REDACTED]  
[REDACTED]



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](http://www.woodside.com)

Our reference: [REDACTED]

03 May 2023

[REDACTED]  
Wirrawandi Aboriginal Corporation  
Karratha Village  
Shop 50, 5-15 Sharpe Ave  
Karratha WA 6714

Dear [REDACTED]

**MEETING 31 MARCH 2023 TO DISCUSS ENVIRONMENT PLAN CONSULTATION WITH THE WIRRAWANDI ABORIGINAL CORPORATION AND ROBE RIVER KURUMA JOINT HERITAGE ADVISORY COMMITTEE,**

Thank you for the opportunity to meet on the 31st March 2023 at the Karratha International Hotel and for the careful consideration of the matters presented at the meeting. Your attendance and feedback is gratefully received, and we look forward to working with the Wirrawandi Aboriginal Corporation (WAC) and Robe River Kuruma Aboriginal Corporation (RRKAC) via their joint Heritage Advisory Committee (HAC).

Firstly, Woodside acknowledges and respects that the WAC and RRKAC have interests in the Environment That May Be Affected (EMBA) by Woodside's Activities and wants to work so that impacts to these values and interests are as minimal as is reasonably practicable.

To this end Woodside presented the following at the meeting:

**An Overview:**

- About Woodside Energy (including area of operations, history and recent merger with BHP Petroleum)
- Environment Plans (including the Environment that Might be Impacted, Planned and Unplanned Risks)

**Activity Overview and Discussion:**

- Decommissioning Activities (covering Nganhurra, Griffin and Stybarrow)
- Scarborough Project activities (covering field, trunkline, drilling and completions, subsea installation and seismic survey)
- Drill rig activities (covering Pluto, Julimar and TPA03)

**Woodside and the Community**

- Social impact Assessment
- Stakeholders Engaged

**Future Relationship and Engagement**

It was encouraging that during the face-to-face engagement the HAC directors and elders were actively engaged and requested further information or clarification on topics related to the proposed activities which was responded to during the meeting:

More specifically Woodside took a number of actions to follow up on:

- HAC asked for a map of SCATL shore crossing with heritage sites identified.

**Response:** The Scarborough trunkline shore crossing is outside of the scope of the EPs before the RRKWAC Heritage Advisory Committee. Heritage management for this area is conducted under the Scarborough Project Cultural Heritage Management Plan (CHMP), which is publicly available on our [website](#). This CHMP was approved

in January 2023, and builds on heritage surveys conducted with Yaburara and Mardudhunera people conducted through Wirrawandi Aboriginal Corporation and Murujuga Aboriginal Corporation. The location and scope of this activity meant that Robe River Kuruma Aboriginal Corporation did not need to input on this CHMP.

Detailed locations of nearby heritage sites have not been included in the CHMP at the request of Traditional Custodians. Publicly available heritage information is provided in Figure 5-1 on page 53 of the CHMP. Crucially, the heritage assessments described in 5.5 have confirmed:

- No heritage sites exist in the onshore footprint of the Scarborough project, including the shore crossing,
- The onshore footprint of the Scarborough project, including the shore crossing, is confined to previously disturbed land within the Pluto LNG facility, and
- No heritage sites were identified in the nearshore (i.e. state) waters.

The CHMP notes in 5.5.9 the intention to conduct Remotely Operated Vehicle inspections. This work has been completed with a qualified maritime archaeologist and also did not identify any heritage sites in nearshore waters.

- HAC asked for further discussion on community partnerships and commercial opportunities desired;

**Response:** Further local engagement can be planned when you are able to advise dates when you are next in Karratha to continue the conversation on what opportunities may be possible in the future

- HAC potential for global balance instability caused by gas extraction

**Response:** The mass of gas extracted, along with the mass of water influx are negligible in comparison to the mass of the earth's layers including solid crust, liquid mantle, core and the earth's atmosphere, and any water or ice on its surface. As a result the development of petroleum fields has a negligible impact on the earth's balance.

Please note that the meeting of 31st March and this response will be included in our Environment Plans for the proposed activities 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).

If you are providing feedback to us following this meeting, please inform us of any sensitive information, and we will make this known to NOPSEMA upon submission of the Environment Plans to ensure this information remains confidential to NOPSEMA.

During the meeting the joint HAC of WAC and RRKAC expressed a desire for ongoing engagement and partnership. Woodside is committed to continuing consultation with Traditional Custodians beyond the submission of Environment Plans and this will not be RRKAC or WAC's only opportunity to engage with us. We look forward to meeting with you to discuss these matters further, and so we can discuss putting in place the support that WAC and RRKAC seeks to continue engagement.

Thank you again for providing us with the opportunity to present to you and for your careful consideration of the matters provided.

Please feel free to contact me at any time, or alternatively [REDACTED] at [REDACTED]@woodside.com.

Sincerely

Via email

[REDACTED]

Copy: feedback@woodside.com

**5.55 Email and letter sent to Robe River Kuruma Aboriginal Corporation (RRKAC) – 3 May 2023**

Dear [REDACTED]

Please find a letter in follow-up to the consultation meeting held on 31 March 2023, with the Robe River Kuruma and Wirrawandi Aboriginal Corporations joint Heritage Advisory Committee.

Kind regards

[REDACTED]

**5.56 Email sent to Murujuga Aboriginal Corporation (MAC) – 15 September 2023**

Hello [REDACTED],

The third email this week from me to you, apologies for the volume of emails but this should be it for this week.

Further to my correspondence earlier in the week about a number of Woodside's decommissioning and project activities, I am writing regarding three of Woodside's Scarborough activities that have been the subject of our consultations to date, particularly in relation to potential impacts to MAC's interests, functions or activities in the environment that may be affected (EMBA) by these activities.

These activities are covered under the following environment plans (EPs):

Scarborough Project Activities

1. Scarborough Seabed Intervention and Trunkline Installation
2. Scarborough Drilling and Completions
3. Scarborough Subsea Infrastructure Installation

I am writing to notify you of Woodside's planned commencement date of these activities, and to seek your confirmation in relation to the following matters on or before the dates set out in the tables below:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by these activities that have not yet been afforded the opportunity to provide information that may inform the management of the activities; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

<b>Environment Plan Open for Feedback</b>	<b>Planned Activity Commencement</b>	<b>Please Provide Feedback By:</b>
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Drilling and Completions	19 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	28 Sep 2023



I have attached the information relevant to each of these activities, and ask that you please distribute it to members or individuals who may be interested.

As with all of our activities, consultation remains ongoing. This means that we will take any feedback regarding the activities, or any other relevant information you may wish to provide, at any time during the activities and will assess this information using the mechanisms described in the EPs.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA "Policy for managing gender-restricted information" provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support their participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

We look forward to ongoing consultation with MAC and to progressing the various matters that have been the subject of our meetings and correspondence to date. As always, please let us know how we can support MAC to progress these matters and to participate in ongoing consultation with Woodside.

Kind Regards

██████

## 5.57 Email sent to Ngarluma Aboriginal Corporation (NAC) – 15 September 2023

Hello ██████,

A second email this week from me regarding environment plans, that should be it for this week. Apologies also as I see [REDACTED] and I doubled up on the previous email. I have sent separately to [REDACTED] as his email address was rejected by our system.

Further to mine (and [REDACTED]'s) correspondence earlier in the week about a number of Woodside's decommissioning and project activities, I am writing regarding three of Woodside's Scarborough activities that have been the subject of our consultations to date, particularly in relation to potential impacts to NAC's interests, functions or activities in the environment that may be affected (EMBA) by these activities.

These activities are covered under the following environment plans (EPs):

Scarborough Project Activities

1. Scarborough Seabed Intervention and Trunkline Installation
2. Scarborough Drilling and Completions
3. Scarborough Subsea Infrastructure Installation

I am writing to notify you of Woodside's planned commencement date of these activities, and to seek your confirmation in relation to the following matters on or before the dates set out in the tables below:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by these activities that have not yet been afforded the opportunity to provide information that may inform the management of the activities; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Drilling and Completions	19 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	28 Sep 2023

I have attached the information relevant to each of these activities, and ask that you please distribute it to members or individuals who may be interested.

As with all of our activities, consultation remains ongoing. This means that we will take any feedback regarding the activities, or any other relevant information you may wish to provide, at any time during the activities and will assess this information using the mechanisms described in the EPs.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)



- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA "Policy for managing gender-restricted information" provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support their participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

We look forward to ongoing consultation with NAC and to progressing the various matters that have been the subject of our meetings and correspondence to date. As always, please let us know how we can support NAC to progress these matters and to participate in ongoing consultation with Woodside.

Kind Regards

██████████

## 5.58 Email sent to Wirrawandi Aboriginal Corporation (WAC) – 18 September 2023

Hi ██████████

Apologies, the previous email sent through this afternoon, I neglected to include two other EP's, Scarborough Drilling & Completion and Scarborough Subsea Infrastructure Installation.

We have previously provided you information on Scarborough environment plans (EPs) seeking information on potential impacts to the interests, functions or activities that you may have in the environment that may be affected (EMBA) for each EP. This includes consultation in relation to:

1. Scarborough Seabed Intervention and Trunkline Installation EP
2. Scarborough Drilling and Completions EP
3. Scarborough Subsea Infrastructure Installation EP

Following on from EMAIL, Woodside is again writing to you to confirm:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

We have attached the information relevant to each of these activities and ask that you distribute it to members or individuals who may be interested.

The proposed commencement of activities under each of these EPs is included below. Please provide any relevant information prior to the date indicated. If no feedback is received relating to items a) and b) above by this time, Woodside will take this to mean that you do not wish to provide this information prior to the commencement of the activity.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	02 Oct 2023
Scarborough Drilling and Completions	19 Oct 2023	02 Oct 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	02 Oct 2023

Please note that we will also take any feedback regarding the above, or any other relevant information you may wish to provide, at any time during the activity and will assess this information using the mechanisms described in the environment plan.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do

so. The attached NOPSEMA “Policy for managing gender-restricted information” provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support your participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

Kind regards,

██████████

### 5.59 Email to Yinggarda Aboriginal Corporation (YAC) – 14 September 2023

Dear ██████████

Further to my correspondence yesterday about a number of Woodside’s decommissioning and project activities, and my email earlier today regarding a consultation framework / agreement between YAC and Woodside, I write regarding three of Woodside’s Scarborough activities. These activities were discussed during our meeting with the YAC Board in early July, particularly in relation to potential impacts to YAC’s interests, functions or activities in the environment that may be affected (EMBA) by these activities.

These activities are covered under the following environment plans (EPs):

#### Scarborough Project Activities

1. Scarborough Seabed Intervention and Trunkline Installation
2. Scarborough Drilling and Completions
3. Scarborough Subsea Infrastructure Installation

I am writing to notify you of Woodside’s planned commencement date of these activities, and to seek your confirmation in relation to the following matters on or before the dates set out in the tables below:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by these activities that have not yet been afforded the opportunity to provide information that may inform the management of the activities; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

<b>Environment Plan Open for Feedback</b>	<b>Planned Activity Commencement</b>	<b>Please Provide Feedback By:</b>
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Drilling and Completions	19 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	28 Sep 2023

I have attached the information relevant to each of these activities, and ask that you please distribute it to members or individuals who may be interested.

As with all of our activities, consultation remains ongoing. This means that we will take any feedback regarding the activities, or any other relevant information you may wish to provide, at any time during the activities and will assess this information using the mechanisms described in the EPs.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

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As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support their participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

We look forward to ongoing consultation with YAC and to progressing the framework / agreement. As always, please let us know how we can support YAC to progress these matters and to participate in ongoing consultation with Woodside.

Sincerely

■

## 5.60 Missed number

## 5.61 Email to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) – 14 September 2023

Dear ■

Further to my correspondence yesterday about a number of Woodside’s decommissioning and project activities, I write regarding three of Woodside’s Scarborough activities that have been the subject of our consultations to date, particularly in relation to potential impacts to BTAC’s interests, functions or activities in the environment that may be affected (EMBA) by these activities.

These activities are covered under the following environment plans (EPs):

Scarborough Project Activities

1. Scarborough Seabed Intervention and Trunkline Installation
2. Scarborough Drilling and Completions
3. Scarborough Subsea Infrastructure Installation

I am writing to notify you of Woodside’s planned commencement date of these activities, and to seek your confirmation in relation to the following matters on or before the dates set out in the tables below:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by these activities that have not yet been afforded the opportunity to provide information that may inform the management of the activities; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Drilling and Completions	19 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	28 Sep 2023

I have attached the information relevant to each of these activities, and ask that you please distribute it to members or individuals who may be interested.

As with all of our activities, consultation remains ongoing. This means that we will take any feedback regarding the activities, or any other relevant information you may wish to provide, at any time during the activities and will assess this information using the mechanisms described in the EPs.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

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As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support their participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

We look forward to ongoing consultation with BTAC and to progressing the various matters that have been the subject of our meetings and correspondence to date. As always, please let us know how we can support BTAC to progress these matters and to participate in ongoing consultation with Woodside.

Sincerely

■

## **5.62 Email to Robe River Kuruma Aboriginal Corporation (RRKAC) – 14 September 2023**

Hi ■

We have previously consulted RRKAC on Scarborough environment plans (EPs) seeking information on potential impacts to the interests, functions or activities that you may have in the environment that may be affected (EMBA) for each EP. This includes consultation in relation to:

1. Scarborough Seabed Intervention and Trunkline Installation EP
2. Scarborough Drilling and Completions EP
3. Scarborough Subsea Infrastructure Installation EP
4. Scarborough Offshore Facility and Trunkline Operations EP

Following on from previous correspondence, Woodside is again writing to you to confirm:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

We have attached the information relevant to each of these activities and ask that you distribute it to members or individuals who may be interested.

The proposed commencement of activities under each of these EPs is included below. Please provide any relevant information prior to the date indicated. If no feedback is received relating to items a) and b) above by this time, Woodside will take this to mean that you do not wish to provide this information prior to the commencement of the activity.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Drilling and Completions	19 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	5 Oct 2023
Scarborough Offshore Facility and Trunkline Operations	December 2024	11 Dec 2023

Please note that we will also take any feedback regarding the above, or any other relevant information you may wish to provide, at any time during the activity and will assess this information using the mechanisms described in the environment plan.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

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As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support your participation in consultation. Please contact



me if you have any questions or wish to discuss further how you would like to provide feedback.

Kind regards,

██████

### **5.63 Email to Nganhurra Thanardi Garrbu Aboriginal Corporation – (NTGAC) – 14 September 2023**

Good morning ██████ and ██████, I hope your week is travelling well.

I am writing as ██████ is travelling presently.

During our meetings with the NTGAC Board we discussed various Scarborough project, decommissioning and project activities, particularly in relation to potential impacts to NTGAC's interests, functions or activities in the environment that may be affected (EMBA) by the activities. These activities are covered under the following environment plans (EPs):

#### Scarborough Project Activities

1. Scarborough Seabed Intervention and Trunkline Installation
2. Scarborough Drilling and Completions
3. Scarborough Subsea Infrastructure Installation

#### Decommissioning and Project Activities

1. Griffin Decommissioning & Field Management
2. Griffin Gas Export Pipeline Decommissioning
3. Griffin Field Decommissioning
4. Stybarrow Plug & Abandonment
5. Stybarrow Decommissioning & Field Management
6. Stybarrow End State Decommissioning
7. WA-34-L Pyxis Drilling and Subsea Installation
8. TPA03 Well Intervention
9. Julimar Appraisal Drilling and Surveys

I am writing to notify you of Woodside's planned commencement date of these activities, and to seek your confirmation in relation to the following matters on or before the dates set out in the tables below:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by these activities that have not yet been afforded the opportunity to provide information that may inform the management of the activities; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

I have attached the information relevant to each of these activities, and ask that you please distribute it to members or individuals who may be interested.



As with all of our activities, consultation remains ongoing. This means that we will take any feedback regarding the activities, or any other relevant information you may wish to provide, at any time during the activities and will assess this information using the mechanisms described in the EPs.

#### Scarborough Project Activities

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Drilling and Completions	19 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	28 Sep 2023

#### Decommissioning and Project Activities

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Griffin Decommissioning & Field Management	27 September	26 September
Griffin Gas Export Pipeline Decommissioning	27 September	26 September
Griffin Field Decommissioning	30 October	30 September
Stybarrow Plug & Abandonment	30 November	30 September
Stybarrow Decommissioning & Field Management	30 October	30 September
Stybarrow End State Decommissioning	30 October	30 September
WA-34-L Pyxis Drilling and Subsea Installation	1 November	15 October
TPA03 Well Intervention	1 November	15 October
Julimar Appraisal Drilling and Surveys	25 September	24 September

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA “Policy for managing gender-restricted information” provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support their participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

We look forward to ongoing consultation with NTGAC and to progressing the various matters that have been the subject of our meetings with YMAC and NTGAC to date. As always, please let us know how we can support YMAC and NTGAC to progress these matters.

Sincerely

■

#### **5.64 Email to Ngarluma Yindjibarndi Foundation Ltd (NYFL) – 14 September 2023**

Hi ■

Emailing NYFL, similar to previous email sent through for Yindjibarndi Aboriginal Corporation.

We have previously provided you information on Scarborough environment plans (EPs) seeking information on potential impacts to the interests, functions or activities that you may have in the environment that may be affected (EMBA) for each EP. This includes consultation in relation to:

1. Scarborough Seabed Intervention and Trunkline Installation EP
2. Scarborough Drilling and Completions EP
3. Scarborough Subsea Infrastructure Installation EP

Following on from EMAIL, Woodside is again writing to you to confirm:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

We have attached the information relevant to each of these activities and ask that you distribute it to members or individuals who may be interested.

The proposed commencement of activities under each of these EPs is included below. Please provide any relevant information prior to the date indicated. If no feedback is received relating to items a) and b) above by this time, Woodside will take this to mean that you do not wish to provide this information prior to the commencement of the activity.

<b>Environment Plan Open for Feedback</b>	<b>Planned Activity Commencement</b>	<b>Please Provide</b>
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		Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Drilling and Completions	19 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	28 Sep 2023

Please note that we will also take any feedback regarding the above, or any other relevant information you may wish to provide, at any time during the activity and will assess this information using the mechanisms described in the environment plan.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA "Policy for managing gender-restricted information" provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support your participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

Kind regards,

██████

## 5.65 Email to Malgana Aboriginal Corporation (MAC) – 14 September 2023

Good afternoon ██████,

Firstly, thank you for receiving and forwarding our recent correspondence to your Board. I left a message on your mobile earlier to enquire as to whether the Board may need any assistance from Woodside at this time.

Further to my correspondence yesterday about a number of Woodside’s decommissioning and project activities, I write regarding two of Woodside’s Scarborough activities that have been the subject of our consultations to date, particularly in relation to potential impacts to MAC’s interests, functions or activities in the environment that may be affected (EMBA) by these activities.

The activities are covered under the following environment plans (EPs):

1. Scarborough Seabed Intervention and Trunkline Installation
2. Scarborough Subsea Infrastructure Installation

I am writing to notify you of Woodside’s planned commencement date of these activities, and to seek your confirmation in relation to the following matters on or before the dates set out in the table below:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by these activities that have not yet been afforded the opportunity to provide information that may inform the management of the activities; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	28 Sep 2023

I have attached information relevant to each of these activities, and ask that you please distribute it to members or individuals who may be interested.

As with all of our activities, consultation remains ongoing. This means that we will take any feedback regarding the activities, or any other relevant information you may wish to provide, at any time during the activities and will assess this information using the mechanisms described in the EPs.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA "Policy for managing gender-restricted information" provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support their participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

We look forward to ongoing consultation with MAC. As always, please let us know how we can support MAC to progress these matters.

Sincerely

■

## 5.66 Email to Nanda Aboriginal Corporation (NAC) – 14 September 2023

Dear ■ and ■,

During Woodside's meeting with Nanda in April, we discussed various Scarborough project, decommissioning and project activities, particularly in relation to potential impacts to NAC's interests, functions or activities in the environment that may be affected (EMBA) by the activities. These activities are covered under the following environment plans (EPs):

### Scarborough Project Activities

1. Scarborough Seabed Intervention and Trunkline Installation
2. Scarborough Subsea Infrastructure Installation

### Decommissioning and Project Activities

1. Griffin Decommissioning & Field Management
2. Griffin Gas Export Pipeline Decommissioning
3. Griffin Field Decommissioning
4. Stybarrow Plug & Abandonment
5. Stybarrow Decommissioning & Field Management
6. Stybarrow End State Decommissioning
7. WA-34-L Pyxis Drilling and Subsea Installation
8. Julimar Appraisal Drilling and Surveys

I am writing to notify you of Woodside’s planned commencement date of these activities, and to seek your confirmation in relation to the following matters on or before the dates set out in the tables below:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by these activities that have not yet been afforded the opportunity to provide information that may inform the management of the activities; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

I have attached the information relevant to each of these activities, and ask that you please distribute it to members or individuals who may be interested.

As with all of our activities, consultation remains ongoing. This means that we will take any feedback regarding the activities, or any other relevant information you may wish to provide, at any time during the activities and will assess this information using the mechanisms described in the EPs.

Scarborough Project Activities

<b>Environment Plan Open for Feedback</b>	<b>Planned Activity Commencement</b>	<b>Please Provide Feedback By:</b>
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Drilling and Completions	19 Oct 2023	28 Sep 2023
Scarborough Subsea Infrastructure Installation	17 Nov 2023	28 Sep 2023

Decommissioning and Project Activities

<b>Environment Plan Open for Feedback</b>	<b>Planned Activity Commencement</b>	<b>Please Provide Feedback By:</b>
Griffin Decommissioning & Field Management	27 September	26 September
Griffin Gas Export Pipeline Decommissioning	27 September	26 September
Griffin Field Decommissioning	30 October	30 September
Stybarrow Plug & Abandonment	30 November	30 September
Stybarrow Decommissioning & Field Management	30 October	30 September
Stybarrow End State Decommissioning	30 October	30 September
WA-34-L Pyxis Drilling and Subsea Installation	1 November	15 October
TPA03 Well Intervention	1 November	15 October
Julimar Appraisal Drilling and Surveys	25 September	24 September

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA "Policy for managing gender-restricted information" provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support their participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

We look forward to ongoing consultation with NAC and to progressing the various matters that have been the subject of our meetings with YMAC and NAC to date. As always, please let us know how we can support YMAC and NAC to progress these matters.

Sincerely

██████

## 5.67 Email to Kariyarra Aboriginal Corporation (KAC) – 18 September 2023

Dear ██████

We have previously consulted Kariyarra Aboriginal Corporation on Scarborough environment plan (EP) seeking information on potential impacts to the interests, functions or activities that you may have in the environment that may be affected (EMBA) for each EP. This includes consultation in relation to:

1. Scarborough Seabed Intervention and Trunkline Installation EP

Following on from previous correspondence, Woodside is again writing to you to confirm:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.



We have attached the information relevant to each of these activities and ask that you distribute it to members or individuals who may be interested.

The proposed commencement of activities under each of these EPs is included below. Please provide any relevant information prior to the date indicated. If no feedback is received relating to items a) and b) above by this time, Woodside will take this to mean that you do not wish to provide this information prior to the commencement of the activity.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	02 Oct 2023

Please note that we will also take any feedback regarding the above, or any other relevant information you may wish to provide, at any time during the activity and will assess this information using the mechanisms described in the environment plan.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA "Policy for managing gender-restricted information" provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support your participation in consultation. Please contact



me if you have any questions or wish to discuss further how you would like to provide feedback.

Kind regards,



**5.68 Email to Nyungamarta Karajarri Aboriginal Corporation – (NKAC) – 18 September 2023**

Dear Nyangumarta Karajarri Aboriginal Corporation

We have previously consulted Nyangumarta Karajarri Aboriginal Corporation on Scarborough environment plan (EP) seeking information on potential impacts to the interests, functions or activities that you may have in the environment that may be affected (EMBA) for each EP. This includes consultation in relation to:

1. Scarborough Seabed Intervention and Trunkline Installation EP

Following on from previous correspondence, Woodside is again writing to you to confirm:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

We have attached the information relevant to each of these activities and ask that you distribute it to members or individuals who may be interested.

The proposed commencement of activities under each of these EPs is included below. Please provide any relevant information prior to the date indicated. If no feedback is received relating to items a) and b) above by this time, Woodside will take this to mean that you do not wish to provide this information prior to the commencement of the activity.

<b>Environment Plan Open for Feedback</b>	<b>Planned Activity Commencement</b>	<b>Please Provide Feedback By:</b>
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	02 Oct 2023

Please note that we will also take any feedback regarding the above, or any other relevant information you may wish to provide, at any time during the activity and will assess this information using the mechanisms described in the environment plan.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA "Policy for managing gender-restricted information" provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support your participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

Kind regards,



## 5.69 Email to Nyangumarta Warrarn Aboriginal Corporation (NWAC) – 18 September 2023

Dear Nyangumarta Warrarn Aboriginal Corporation

We have previously consulted Nyangumarta Warrarn Aboriginal Corporation on Scarborough environment plan (EP) seeking information on potential impacts to the interests, functions or activities that you may have in the environment that may be affected (EMBA) for each EP. This includes consultation in relation to:

1. Scarborough Seabed Intervention and Trunkline Installation EP

Following on from previous correspondence, Woodside is again writing to you to confirm:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and

- b. if there is any information you wish to provide on cultural features and/or heritage values.

We have attached the information relevant to each of these activities and ask that you distribute it to members or individuals who may be interested.

The proposed commencement of activities under each of these EPs is included below. Please provide any relevant information prior to the date indicated. If no feedback is received relating to items a) and b) above by this time, Woodside will take this to mean that you do not wish to provide this information prior to the commencement of the activity.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	02 Oct 2023

Please note that we will also take any feedback regarding the above, or any other relevant information you may wish to provide, at any time during the activity and will assess this information using the mechanisms described in the environment plan.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder’s ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA “Policy for managing gender-restricted information” provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support your participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

Kind regards,

██████

**5.70 Email to Karajarri Traditional Lands Association (KTLA) – 18 September 2023**

Dear ██████

We have previously consulted Karajarri Traditional Lands Trust on Scarborough environment plan (EP) seeking information on potential impacts to the interests, functions or activities that you may have in the environment that may be affected (EMBA) for each EP. This includes consultation in relation to:

1. Scarborough Seabed Intervention and Trunkline Installation EP

Following on from previous correspondence, Woodside is again writing to you to confirm:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

We have attached the information relevant to each of these activities and ask that you distribute it to members or individuals who may be interested.

The proposed commencement of activities under each of these EPs is included below. Please provide any relevant information prior to the date indicated. If no feedback is received relating to items a) and b) above by this time, Woodside will take this to mean that you do not wish to provide this information prior to the commencement of the activity.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	02 Oct 2023

Please note that we will also take any feedback regarding the above, or any other relevant information you may wish to provide, at any time during the activity and will assess this information using the mechanisms described in the environment plan.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by taking into account the information received. This process is intended to improve the titleholder's ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA "Policy for managing gender-restricted information" provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support your participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

Kind regards,

■

### 5.71 Email to Wanparta Aboriginal Corporation (WAC) – 14 September 2023

Hi ■

Hope you are well.

This is a courtesy email as we did cover these Environment Plans (EPs) at our consultation meeting 31-Aug-23, however If there has been any change of opinion from Wanparta Aboriginal Corporation, please feel free to comment.

We have previously consulted with Wanparta on Scarborough EPs seeking information on potential impacts to the interests, functions, or activities that you may have in the Environment that May Be Affected (EMBA) for each EP. This includes consultation in relation to:

1. Scarborough Seabed Intervention and Trunkline Installation EP
2. Scarborough Drilling and Completions EP
3. Scarborough Subsea Infrastructure Installation EP
4. Scarborough Offshore Facility and Trunkline Operations EP

Woodside is again writing to you to confirm:

- a. if you are aware of any people, who in accordance with Indigenous tradition, may have spiritual and cultural connections to the environment that may be affected by the activity that have not yet been afforded the opportunity to provide information that may inform the management of the activity; and
- b. if there is any information you wish to provide on cultural features and/or heritage values.

We have attached the information relevant to each of these activities and ask that you distribute it to members or individuals who may be interested.

The proposed commencement of activities under each of these EPs is included below. Please provide any relevant information prior to the date indicated.

Environment Plan Open for Feedback	Planned Activity Commencement	Please Provide Feedback By:
Scarborough Seabed Intervention & Trunkline Installation	15 Oct 2023	28 Sep 2023
Scarborough Offshore Facility and Trunkline Operations	December 2024	11 Dec 2023

Please note that we will also take any feedback regarding the above, or any other relevant information you may wish to provide, at any time during the activity and will assess this information using the mechanisms described in the environment plan.

As you are aware, NOPSEMA has published a number of documents on consultation (please see [Document Hub | NOPSEMA](#)). For your convenience we have provided links to the following recent publications below:

- **Brochure:** [Consultation on offshore petroleum environment plans brochure.pdf \(nopsema.gov.au\)](#)
- **Guideline:** [Guideline: Consultation in the course of preparing an environment plan \(nopsema.gov.au\)](#); and
- **Policy:** [Draft policy for managing gender-restricted information PL2098.pdf \(nopsema.gov.au\)](#).

As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons, or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder an opportunity to receive information that it might not otherwise receive from those affected by the proposed activity, and for the titleholder to refine or change the measures it proposes to address impacts and risks by considering the information received. This process is intended to improve the titleholder’s ability to minimise environmental impacts and risks from the activity.

We also want to make you aware that gender-restricted or other culturally sensitive information is managed carefully. If you have gender-restricted or other culturally sensitive information you wish to share, please let us know and we can discuss how to you want it to be managed. If you would prefer to provide the information directly to NOPSEMA, please do so. The attached NOPSEMA “Policy for managing gender-restricted information” provides information on this.

As you are aware, Woodside provides various forms of assistance to PBCs, Traditional Custodian groups or individuals to support your participation in consultation. Please contact me if you have any questions or wish to discuss further how you would like to provide feedback.

Kind regards

██████████

## **6 NEWSPAPER ADVERTISEMENTS, GEOTARGETED SOCIAL MEDIA CAMPAIGNS AND COMMUNITY INFORMATION SESSIONS (2023)**

### **6.1 Newspaper advertisements (October 2022 and January 2023)**

- The Australian, The West Australian, Pilbara News (19 October 2022)



# No DNA evidence to back Higgins: defence

Continued from page 1

He said while Ms Higgins said she'd taken a photo after the alleged assault on April 15, 2019, there was no medical evidence supporting whether the image would have remained 15 days later. "Her contention is in [alleged rape] Mr Higgins' head," he said.

Mr Whitmore suggested Ms Higgins was trying to cover up what happened because it "would be pretty embarrassing" to be found passed out as a sex worker's "getting home drunk". "That's not good for you," he said.

"Is there a reasonable possibility this complaint is being made because her dream job is from her perspective, innocently?" Mr Whitmore said the "dead-end" interpretation of Ms Higgins' actions was that she simply "didn't know" what happened that night, given her level of intoxication. "She doesn't know what happened. You can't be satisfied beyond reasonable doubt that she knew what happened," he said.

However, Mr Drummond said Ms Higgins was an "intoxicated middle woman" and if her allegations had been a "fabrication", she was "quite the actor" who had managed to fool her even mother while remaining consistent in her story over the 15 days.

"When she cracks it's all something she'll never do, when she doesn't know an answer, she makes a plan," he said.

Ms Higgins' defence barrister had her account of rape at all, she didn't say it went for hours but just for three minutes.

Mr Drummond said Ms Higgins had significant "political" reasons for the alleged rape and was right to be concerned for the continued viability of her political career if she proceeded with a formal complaint.

"It's clear to say that this is a young lady who was on the inside of strong political forces and we say she was right to be scared," he said.



'Right to be scared': Higgins says she was right to be cautious and we say she was right to move forward slowly and carefully as handling her life over the police, he said.

Mr Drummond pointed to evidence given by Senator Reynolds to the court on Monday, where it was revealed she tested one of Mr Letlemann's lawyers asking, "Is this you have the daily transcript?"

"It's clear to say that this is a young lady who was on the inside of strong political forces," he said.

Mr Drummond also raised questions over Mr Letlemann having the facts of the alleged rape made public when he was not a party to the case.

Mr Letlemann said he left because he "had side issues" but already agreed, which Mr Drummond said was not exactly true and the Uber was still three minutes away when he exited the building.

The prosecution also argued Mr Letlemann had an "affair" with Ms Higgins, backing up her claim that she had sex with him on the night of the alleged rape.

Mr Letlemann said he left because he "had side issues" but already agreed, which Mr Drummond said was not exactly true and the Uber was still three minutes away when he exited the building.

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and Bruce Letlemann on a crash to mean on Saturday the 2nd of March 2019.

While Mr Drummond said Ms Higgins was a "young, confident and smart" woman when she was 21, 2019, including that he was going to "drink whisky", pick up the keys and work on a question document.

Mr Letlemann said he told someone, including security and police, that he had been "impounded" to pick up documents and "work on question-time documents". "Defence was not getting the entire work that followed, this was clearly not true," Mr Drummond said.

"We say this [paraphrase] was the most convenient place to get her [Ms Higgins] alone, not a random person in the middle of the night."

Mr Drummond also raised questions over Mr Letlemann having the facts of the alleged rape made public when he was not a party to the case.

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'No ones to bring anything': Letlemann arrives at court during the trial.

he called Ms Higgins "good looking" and took photos, should impact the jury's view of whether or not the alleged rape took place.

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"At wit's end": rape accused knew his political career over

Rape accused Bruce Letlemann says he was at his "wit's end" and knew his political career was over after allegations of sexual assault were published and broadcast by the press.

The ACT Supreme Court on Tuesday released the transcript of Mr Letlemann's interview with the Australian Federal Police - recorded on April 15, 2019 - after it was played to the jury last week.

Mr Letlemann is on trial for the rape of former minister adviser Britney Higgins, to which he has pleaded not guilty, and for framing it as the only direct account of his version of events made available.

The former staffer told AFP detectives Emma Frazar and Marcus Sheehan he knew he was "done" when Ms Higgins' allegations were published and said a journalist friend had been doing his best to help.

"I understand [a reporter] has got footage of me trying to get across mental health for the first time because I'm at my wit's end," he said.

"Because I know politics, Mr Drummond said the essence of the case was "whether Britney Higgins made up the allegations of what happened to her on the night she was with Bruce Letlemann".

"If she did, it was obvious," he said. "She had done consistently for 15 years."

He added that there was no way Ms Higgins could have come to court in a state of mind after having had about 10 drinks and falling asleep on the couch in Senator Reynolds' office.

"You cannot consent to something if you're passed out," he said. Mr Whitmore suggested to jury Mr Letlemann had "important" reasons for the alleged rape.

"That's very, very important to me as a man who has been there's already been a fair bit of trial by media," he said.

"We are here for promptness in response," he said.

ACT Chief Justice Lucretia Triggs is expected to give a summary to the court on Wednesday and then return to the jury for a deliberation.

When something like this happens and you're that of from everyone, you're done from like a PR perspective," Mr Higgins has alleged Mr Letlemann raped her on a couch in the ministerial office of then defence industry minister Leah Reynolds on March 23 after a night and breakfast with colleagues. He denies charges of sexual intercourse without consent and recklessness towards whether Ms Higgins was consenting and will appear as a witness in the trial.

Mr Letlemann said he went through a "rough fortnight" and didn't know who he could talk to or trust and he had to even appear to his defence counsel for weeks because "nothing happened".

He said he was "intensely scared" after working in Parliament House and had started working out as a call plan after Malcolm Turnbull was called in August 2018. "At that point I was with Bridget McKenzie and... consider from their staff in a way I've not seen after leaving politics," he said.

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## SCARBOROUGH PROJECT ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct activities in Commonwealth waters for the Scarborough Project.

These Environment Plans (EPs) have been developed 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. The activities proposed under these EPs are set out in the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant provisions in the OPP. The OPP includes a detailed description of activities and an assessment of impacts, with controls to manage unacceptable impacts. The OPP was accepted by NOPSEMA in March 2022 after an extensive public consultation process.

### Scarborough Seabed Intervention and Trunkline Installation Environment Plan

<b>Activity summary:</b>	Seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities run from the Commonwealth - State waters boundary approximately 62km north of Canberra to the Scarborough gas field located at Woodside operated site Block WA-61-L, approximately 178 km west-northwest of the Burrell Peninsula.
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2022 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns.
<b>Completion of consultation:</b>	August 2022
<b>EP submission to NOPSEMA:</b>	23 December 2022

### Scarborough Drilling & Completions Environment Plan

<b>Activity summary:</b>	Drilling and tubular installation activities for eight planned development wells and the potential for further two additional contingency wells.
<b>Location:</b>	244 km north-northwest of Damper, 274 km west-northwest of Damper.
<b>Earliest commencement date:</b>	H2 2022 pending approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	1-50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
<b>Completion of consultation:</b>	July 2022
<b>EP submission to NOPSEMA:</b>	8 November 2022

## SCARBOROUGH PROJECT ENVIRONMENT PLAN NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct activities in State Coastal waters of the Damper Archipelago for the Scarborough Project.

The Environment Plan (EP) has been developed in accordance with the Petroleum (Submerged Lands) (Environment) Regulations 2012 administered by the Department of Home Affairs, Regulation and Safety (DHRS). The primary environmental approval for the Scarborough Development Nameplate component was granted through Ministerial Statement No. 512 dated August 2022.

### Scarborough Trunkline Installation (State Waters) Environment Plan

<b>Activity summary:</b>	Seabed intervention and trunkline installation activities in State waters for the Scarborough development.
<b>Location:</b>	Damper Archipelago, North-West Australia between the Coastal waters boundary and the Public Land Unit Activity.
<b>Commencement date:</b>	Anticipated around Q4 2022
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns. Activities will typically occur 24 hours/day, seven days a week, noting that not all activities will be undertaken at the same time.
<b>Completion of consultation:</b>	March 2022
<b>EP submission to DHRS:</b>	20 June 2022

### Providing Feedback

Woodside consults relevant persons in the course of preparing EPs to notify them of the activity, to obtain relevant feedback to inform its planning for proposed petroleum activities in the region and to obtain input as to appropriate measures that may be adopted to mitigate the adverse environmental effects that the proposed petroleum activities may otherwise cause. If you would like to comment on the proposed activities outlined above, or would like additional information, please contact Woodside before **Wednesday, 2 November 2022** via: [Feedback@woodside.com](mailto:Feedback@woodside.com). Tel: free 1800 442 977. A detailed consultation information sheet for each EP is available at [www.woodside.com/australia/consultation-activities](http://www.woodside.com/australia/consultation-activities). You can also subscribe to receive future information on proposed activities. Please note that stakeholder feedback will be communicated to NOPSEMA as required under legislation. Woodside will communicate any material changes to the proposed activity to affected 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 2008 (OPR). Please let us know if your feedback for this activity 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.

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**PUBLIC NOTICES**

**Woodside Energy**

**Scarborough Project Environment Plan Notice**

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct activities in State Coastal waters of the Dampier Archipelago for the Scarborough Project.

The Environment Plan (EP) has been developed in accordance with the Petroleum (Submerged Lands) (Environment) Regulations 2012 administered by the Department of Mines Industry Regulation and Safety (DMIRS). The primary environmental approval for the Scarborough Development Nearshore component was granted through Ministerial Statement No. 1172 dated August 2021.

**Scarborough Trunkline Installation (State Waters) Environment Plan**

<b>Activity summary:</b>	Seabed intervention and trunkline installation activities in State waters for the Scarborough development.
<b>Location:</b>	Dampier Archipelago, North West Australia between the Coastal waters boundary and the Plus LNO facility.
<b>Commencement date:</b>	Anticipated around Q1 2023.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns. Activities will typically occur 24 hours per day, seven days a week, noting that not all activities will be undertaken at the same time.
<b>Commencement of consultation:</b>	March 2022
<b>EP submission to DMIRS:</b>	01 June 2022

**Providing Feedback**

Woodside consults relevant persons in the course of preparing EPs to notify them of the activity, to obtain relevant feedback to inform its planning for proposed petroleum activities in the region and to obtain input as to appropriate measures that may be adopted to mitigate the adverse environmental effects that the proposed petroleum activities may otherwise cause.

If you would like to comment on the proposed activities outlined above, or would like additional information, please contact Woodside before **Wednesday, 2 November 2022** via:

**F. Feedback@woodside.com**  
Tel: free 1800 442 977

A detailed consultation information sheet for the EP is available at: [www.woodside.com.au/scarborough/consultation-activities](http://www.woodside.com.au/scarborough/consultation-activities)

You can also subscribe to receive future information on proposed activities.

Please note that stakeholder feedback will be communicated to DMIRS 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 DMIRS for acceptance in accordance with the Petroleum (Submerged Lands) (Environment) Regulations 2012.

Please let us know if your feedback for this activity is sensitive and we will make this known to DMIRS upon submission of the Environment Plan in order for this information to remain confidential to DMIRS.

**Woodside Energy**

**Scarborough Project Environment Plans Notice**

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct activities in Commonwealth waters for the Scarborough Project.

Three Environment Plans (EPs) have been developed in accordance with the regulations administered by the Regional Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2016. The activities proposed under these EPs are set out in the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant provisions in the OPP. The OPP includes a detailed description of activities and an assessment of impacts, with controls to ensure acceptable outcomes. The OPP was approved by NOPSEMA in March 2020 after an extensive public consultation process.

**Scarborough Seabed Intervention and Trunkline Installation Environment Plan**

<b>Activity summary:</b>	Seabed intervention and trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities on the plus LNO (Commonwealth) - State waters boundary approximately 32 km north of Dampier in the Scarborough gas field located at Woodside-operated site WA-414, approximately 20 km east-northeast of the Burns Peninsula.
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2022 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns.
<b>Commencement of consultation:</b>	August 2022
<b>EP submission to NOPSEMA:</b>	01 December 2022

**Scarborough Drilling & Completions Environment Plan**

<b>Activity summary:</b>	Drilling and completion well installation activities for eight planned development wells and the potential for a further five additional contingency wells for the Scarborough development.
<b>Location:</b>	284 km north-northwest of Exmouth, 374 km east-northeast of Dampier.
<b>Earliest commencement date:</b>	Q4 2022 pending approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	0 to 90 days per well. Activities will typically occur 24 hours per day, seven days per week.
<b>Commencement of consultation:</b>	July 2021
<b>EP submission to NOPSEMA:</b>	8 November 2021

**WA-414 and WA-424 Scarborough Subsea Infrastructure Environment Plan**

<b>Activity summary:</b>	Seabed surveys and installation of subsea production infrastructure required to support Burns production from the Scarborough Field.
<b>Location:</b>	24 km north-northwest of Exmouth, 174 km east-northeast of Dampier.
<b>Earliest commencement date:</b>	H2 2022 pending approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
<b>Commencement of consultation:</b>	September 2022

**Providing Feedback**

Woodside consults relevant persons in the course of preparing EPs to notify them of the activity, to obtain relevant feedback to inform its planning for proposed petroleum activities in the region and to obtain input as to appropriate measures that may be adopted to mitigate the adverse environmental effects that the proposed petroleum activities may otherwise cause.

If you would like to comment on the proposed activities outlined above, or would like additional information, please contact Woodside before **Wednesday, 2 November 2022** via:

**F. Feedback@woodside.com**  
Tel: free 1800 442 977

A detailed consultation information sheet for each EP is available at: [www.woodside.com.au/scarborough/consultation-activities](http://www.woodside.com.au/scarborough/consultation-activities)

You can also subscribe to receive future information on proposed activities.

Please note that stakeholder feedback will be communicated to NOPSEMA as required under legislation. Woodside will communicate material changes to the proposed controls 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 2020 (OPGS).

Please let us know if your feedback for this activity 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.

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**ROADWORKS**

**Minilya Exmouth Road**  
June - October 2022

Road widening works will be occurring concurrently on the Minilya Exmouth Road from June until October 2022. The work on Minilya Exmouth Road starts at the intersection of Minilya Exmouth Road and North West Coastal Highway intersection, for a 4.5 kilometre section.

Traffic management will be in place, and road users can expect some delays. It is recommended to check the Main Roads Travel Map [travelmap.mainroads.wa.gov.au](http://travelmap.mainroads.wa.gov.au) to plan your journey.

If you require additional information, or would like to provide feedback please contact our Customer Information Centre on 136 136, or visit the Main Roads website [mainroads.wa.gov.au](http://mainroads.wa.gov.au).

**TENDERS**

**SHIRE OF EXMOUTH**

**REQUEST FOR QUOTE RFQ 14-2022**

**Street Tree Pruning, Removal and Mulching of Material and Delivery to Location**

The Shire of Exmouth is seeking a suitably qualified contractor for street tree pruning, removal and/or mulching of material, and delivery to location as detailed within the scope of works.

A copy of the RFQ documentation is available from [tenderslink@exmouth.wa.gov.au](mailto:tenderslink@exmouth.wa.gov.au). Submissions must be lodged via TenderLink Portal - [portal.tenderlink.com/exmouth](http://portal.tenderlink.com/exmouth)

Conversing of Councilors will disqualify. Submissions must be lodged via the TenderLink Portal no later than **2:00pm, Monday 31st October 2022**.

**Ben Lewis**  
CHIEF EXECUTIVE OFFICER

**PRE-TENDER BRIEFING AND EARLY TENDER ADVICE**

**REQUEST FOR TENDER (RFT)**

**PORT OF PORT HEDLAND EASTERN HARBOUR SECURITY GATEHOUSE - DESIGN AND CONSTRUCT**

**Tender Reference T12/22**

Interested parties are invited to tender for the design and construct of the Security Gatehouse at the Eastern Harbour of the Pilbara Ports Authority's (PPA) Port of Port Hedland.

The aim of the project is to design, construct, transport and install a new fit for purpose modular security gatehouse building at the Gilbert Street entrance to the Port of Port Hedland.

Tender documents are available for download from the Tenders WA website at the following address: [www.tenders.wa.gov.au](http://www.tenders.wa.gov.au) and contain additional detail on the RFT process and the Works.

Interested parties are required to register on the Tenders WA website to be able to download and receive the tender documents and lodge submissions.

There will be a **mandatory online tender briefing at 10:00am WST on Wednesday 19 October 2022**; further details of which can be found in the tender documents.

If assistance is required in downloading the tender documents from the above web address or there are any questions relating to this tender, tenderers should contact Samantha Fernandes on (08) 9173 9180 or e-mail [samantha.fernandes@pilbaraports.com.au](mailto:samantha.fernandes@pilbaraports.com.au).

Tenders must be lodged electronically at the Tenders WA website.

**Tenders close at 4:00pm WST on Monday 7 November 2022.** No tenders will be able to be lodged after this time.

PPA is not obliged to enter into any contractual arrangements with any interested party as a result of this Tender process. PPA is not obliged to accept the lowest or any tender.

**PILBARA PORTS AUTHORITY**

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**TRADITIONAL AUCTION**

**Lot 109 Bedrock Turn, Gap Ridge Estate, Karratha**  
**Saturday 22nd October at 10am**

**AUCTION ITEMS INCLUDE:** Mining and Passenger Vehicles, Trucks, Trailers, Axleload Plant & Equipment, Containers, Mining and Oil & Gas Spares, like variety items.

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**Contact: Mark Davenport 0429 085 606 or Dave Crofts 0418 945 349**

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**PUBLIC NOTICES**



**Scarborough Project Environment Plans Notice**

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct activities in Commonwealth waters for the Scarborough Project.

These Environment Plans (EPs) have been developed 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 2020. The activities proposed under these EPs are set out in the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant provisions in the OPP. The OPP includes a detailed description of activities and an assessment of impacts, with controls to develop acceptability criteria. The OPP was accepted by NOPSEMA in March 2022 after an extensive public consultation process.

**Scarborough Seabed Intervention and Trunkline Installation Environment Plan**

<b>Activity summary:</b>	Seabed intervention and Trunkline installation activities in Commonwealth waters for the Scarborough development.
<b>Location:</b>	Activities are from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated block WA-61-L, approximately 234 km west-northwest of the Burnt Peninsula.
<b>Earliest commencement date:</b>	Seabed intervention activities: Q4 2022 pending approvals, vessel availability and weather constraints. Trunkline installation activities: Q4 2022 pending successful completion of State waters installation scope, approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns.
<b>Commencement of consultation:</b>	August 2021
<b>EP submission to NOPSEMA:</b>	23 December 2021

**Scarborough Drilling & Completions Environment Plan**

<b>Activity summary:</b>	Drilling and advice base installation activities for eight planned development wells and the potential for a further non-production completion in the Scarborough Field.
<b>Location:</b>	244 km north-northwest of Esmerath, 374 km west-northwest of Dampier
<b>Earliest commencement date:</b>	H2 2022 pending approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	~ 30-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
<b>Commencement of consultation:</b>	July 2021
<b>EP submission to NOPSEMA:</b>	8 November 2021

**WA-61-L and WA-62-L Scarborough Subsea Infrastructure Environment Plan**

<b>Activity summary:</b>	Install site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
<b>Location:</b>	244 km north-northwest of Esmerath, 374 km west-northwest of Dampier
<b>Earliest commencement date:</b>	H2 2022 pending approvals, vessel availability and weather constraints.
<b>Estimated duration:</b>	Approximately 18 months (cumulative) for the survey and installation activities. When underway activities will be conducted 24 hours per day, seven days per week.
<b>Commencement of consultation:</b>	September 2022

**Providing Feedback**

Woodside consults relevant persons in the course of preparing EPs to notify them of the activity to obtain relevant feedback to inform its planning for proposed petroleum activities in the region and to obtain input as to appropriate measures that may be adopted to mitigate the adverse environmental effects that the proposed petroleum activities may otherwise cause.

If you would like to comment on the proposed activities outlined above, or would like additional information, please contact Woodside before **Wednesday, 2 November 2022** via:


E: [Feedback@woodside.com](mailto:Feedback@woodside.com)  
Toll free: 1800 442 377

A detailed consultation information sheet for each EP is available at [www.woodside.com.au/activities/consultation-activities](http://www.woodside.com.au/activities/consultation-activities). You can also subscribe to receive future information on proposed activities.

Please note that stakeholder feedback will be communicated to NOPSEMA as required under legislation. Woodside will communicate material changes to the proposed controls to be effected at stakeholder activities 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 Act 2020 (OPGSA) Regulations 2020 (CR).

Please let us know if your feedback for this activity 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.

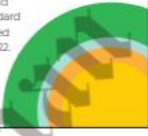


**Change to our standard variable interest rate.**

Keystart Loans Ltd gives notice to our customers with loans commencing from 16 October 2009, the standard variable interest rate will be increased to 7.01% pa, effective 21 October 2022.

For customers with loans prior to and including 16 October 2009, the standard variable interest rate will be increased to 6.23% pa, effective 21 October 2022.

ABN: 27 009 427 034  
Australian Credit License: 36143




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**Scarborough Project Environment Plan Notice**

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct activities in State Coastal waters of the Dampier Archipelago for the Scarborough Project.

The Environment Plan (EP) has been developed in accordance with the Petroleum (Submerged Lands) (Environment) Regulations 2012 administered by the Department of Mines Industry Regulation and Safety (DMIRS). The primary environmental approval for the Scarborough Gas project offshore component was granted through Ministerial Statement No. 1172 dated August 2021.

**Scarborough Trunkline Installation (State Waters) Environment Plan**

<b>Activity summary:</b>	Seabed intervention and trunkline installation activities in State waters for the Scarborough development.
<b>Location:</b>	Dampier Archipelago, North-West Australia between the Coastal waters boundary and the Pluto LNG facility.
<b>Commencement date:</b>	Anticipated around Q1 2023.
<b>Estimated duration:</b>	Approximately 24 months across multiple campaigns. Activities will typically occur 24 hours a day, seven days a week, noting that not all activities will be undertaken at the same time.
<b>Commencement of consultation:</b>	March 2022
<b>EP submission to DMIRS:</b>	20 June 2022

**Providing Feedback**

Woodside consults relevant persons in the course of preparing EPs to notify them of the activity, to obtain relevant feedback to inform its planning for proposed petroleum activities in the region and to obtain input as to appropriate measures that may be adopted to mitigate the adverse environmental effects that the proposed petroleum activities may otherwise cause.

If you would like to comment on the proposed activities outlined above, or would like additional information, please contact Woodside before **Wednesday, 2 November 2022** via:

E: [Feedback@woodside.com](mailto:Feedback@woodside.com)  
Toll free: 1800 442 377

A detailed consultation information sheet for the EP is available at [www.woodside.com.au/activities/consultation-activities](http://www.woodside.com.au/activities/consultation-activities). You can also subscribe to receive future information on proposed activities.

Please note that stakeholder feedback will be communicated to DMIRS as required under legislation. Woodside will communicate any material changes to the proposed controls to be effected at stakeholder activities 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 DMIRS for acceptance in accordance with the Petroleum (Submerged Lands) (Environment) Regulations 2012.

Please let us know if your feedback for this activity is sensitive and we will make this known to DMIRS upon submission of the Environment Plan in order for this information to remain confidential to DMIRS.



**NOTICE TO GRANT MINING TENEMENTS**  
NATIVE TITLE ACT 1993 (Cth) SECTION 29

- The Australian, The West Australian, Pilbara News, Midwest Times, North West Times (18 January 2023)
- Geraldton Times (20 January 2023)

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The Australian – 18 January 2023

**ENVIRONMENT PLANS NOTICE**

Woodside Energy Services Ltd (WES) has lodged Environment Plans (EPs) for the Scarborough Seabed Intervention and Trunkline Installation Environment Plan (SEI) with the Department of the Environment, Water and Heritage (DEW) under the Environment Protection Act 1986 (EPA).

The EPs are subject to public comment and are available on the DEW website at <https://www.environment.wa.gov.au/ep-notices>.

Activity summary	Location	Consentment filing	Estimated duration	Consultation or assessment
Seabed intervention and trunkline installation	Offshore Scarborough, Western Australia	EP 2021/0001	From 19 Dec 2021 to 19 Feb 2022	First EP submission to DEW on 19 Dec 2021

**Seabed Intervention and Trunkline Installation Environment Plan**

**Activity summary**: Seabed intervention and trunkline installation.

**Location**: Offshore Scarborough, Western Australia.

**Consentment filing**: EP 2021/0001.

**Estimated duration**: From 19 Dec 2021 to 19 Feb 2022.

**Consultation or assessment**: First EP submission to DEW on 19 Dec 2021.

**Seabed Intervention and Trunkline Installation Environment Plan**

**Activity summary**: Seabed intervention and trunkline installation.

**Location**: Offshore Scarborough, Western Australia.

**Consentment filing**: EP 2021/0001.

**Estimated duration**: From 19 Dec 2021 to 19 Feb 2022.

**Consultation or assessment**: First EP submission to DEW on 19 Dec 2021.

**Seabed Intervention and Trunkline Installation Environment Plan**

**Activity summary**: Seabed intervention and trunkline installation.

**Location**: Offshore Scarborough, Western Australia.

**Consentment filing**: EP 2021/0001.

**Estimated duration**: From 19 Dec 2021 to 19 Feb 2022.

**Consultation or assessment**: First EP submission to DEW on 19 Dec 2021.

**Consultation Period for public comment**

The public comment period for the EPs will be open from 19 Dec 2021 to 19 Feb 2022. If you wish to provide comments, please contact Woodside Energy Services Ltd on 08 9444 6427 or [ep@woodside.com.au](mailto:ep@woodside.com.au).

8 THE AUSTRALIAN, ANNOUNCEMENT 28, 2023 WORLD

# Iran raids coffers to help fight protesters

**IRAN** has raised a record amount of money in a surprise sale of government assets to help fund its fight against protesters.

The Islamic Republic sold off a range of assets, including a fleet of oil tankers, for a total of \$1.2 billion, according to Iranian state media.

The sale was part of a broader effort to raise funds for the government's operations, particularly in light of the economic challenges it faces due to international sanctions.

Iran's economy has been hit hard by the sanctions, which have led to a sharp decline in oil exports and a consequent loss of revenue.

The government has also been facing protests and civil unrest, which it has attributed to foreign interference and economic hardship.

The sale of assets is seen as a necessary measure to maintain the government's stability and continue its operations.

# Italy mourns golden screen goddess

Italy is mourning the death of a golden screen goddess, with fans expressing their grief and paying tribute to her legacy.

The actress, who was one of the most popular and iconic figures of Italian cinema, passed away after a long battle with illness.

Her death has been widely reported in the media, and fans are flocking to her home town for a public memorial.

The actress was known for her powerful performances and her collaborations with some of the greatest directors of Italian cinema.

Her passing is a significant loss to the film industry and the Italian people, who have admired her for decades.



The actress's death has sparked a wave of nostalgia, with many fans revisiting her classic films and TV shows.

Her legacy continues to inspire new generations of actors and actresses, and her work remains a significant part of Italian cultural heritage.

The public mourning reflects the deep connection between the actress and her audience, and the impact she had on the film industry.

Her death is a reminder of the talent and dedication of the golden age of cinema, and the enduring power of her art.

The West Australian – 18 January 2023

46 • WEDNESDAY, JANUARY 30, 2023

Funeral Notices

BOWRA & O'DEA
Funeral Service for Mrs. Anne Patricia...
131 GIFT BASTION HWY MELB 3020 7255

BOWRA & O'DEA
Funeral Service for Mrs. Mary Margaret...
317 SOUTH STREET MELB 3020 7743

BOWRA & O'DEA
Funeral Service for Mrs. Joan Margaret...
131 GIFT BASTION HWY MELB 3020 7255

BOWRA & O'DEA
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ENVIRONMENT PLANS NOTICE

Woodside Energy Services Pty Ltd (WES) is proposing to conduct four activities in Commonwealth waters off the West Australian coast...

Table with 4 columns: Activity name, Location, Commencement date, and Date of last update. Includes details for Scarborough Seabed Intervention and Trunkline Installation Development Plan.

Scarborough Seabed Intervention and Trunkline Installation Development Plan

Table with 4 columns: Activity name, Location, Commencement date, and Date of last update. Includes details for Scarborough Seabed Intervention and Trunkline Installation Development Plan.

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GENERAL

Woodside Energy Services Pty Ltd (WES) is proposing to conduct four activities in Commonwealth waters off the West Australian coast...



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Woodside Energy Services Pty Ltd (WES) is proposing to conduct four activities in Commonwealth waters off the West Australian coast...

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Pilbara News – 18 January 2023

Pilbara News January 18, 2023 – Page 13

p. 18/Jan23 2023:00

### ENVIRONMENT PLANS NOTICE

The Department of Planning, Lands and Heritage has received applications from the following organisations for Environment Plans for the Pilbara region:

Organisation	Activity Name	Location	Commencement Date	Completion Date	Approval Status
Shire of Exmouth	2023 Total Solar Replaces	Exmouth	21/01/2023	31/12/2023	Approved
Shire of Exmouth	2023 Total Solar Replaces	Exmouth	21/01/2023	31/12/2023	Approved

Public Notices

#### SHIRE OF EXMOUTH

### RFP# 06/2023 Supply of Solid Waste Management Services (2023 Total Solar Replaces)

The Shire of Exmouth is seeking a suitably qualified and experienced supplier to provide the solid waste management services for Solid Waste, comprising of the Total Solar Replaces Project.

A copy of the RFP documents can be downloaded from Exmouth's website prior to the expression of interest deadline. Submissions must be completed and sealed in accordance with the RFP conditions.

Closing of Bids: Monday 30 January 2023, 10:00am AEST.  
 Tender and Pre-bid site inspection: 20-21 January 2023.

Ben Lewis  
 CHIEF EXECUTIVE OFFICER

#### SHIRE OF EXMOUTH

### REQUEST FOR QUOTE R174 03-2023 Supply of Firefighting Equipment (2023 Total Solar Replaces)

The Shire of Exmouth is seeking a suitably qualified and experienced supplier to provide the firefighting equipment for Solid Waste, comprising of the Total Solar Replaces Project.

A copy of the RFP documents can be downloaded from Exmouth's website prior to the expression of interest deadline. Submissions must be completed and sealed in accordance with the RFP conditions.

Closing of Bids: Monday 30 January 2023, 10:00am AEST.  
 Tender and Pre-bid site inspection: 20-21 January 2023.

Ben Lewis  
 CHIEF EXECUTIVE OFFICER

#### SHIRE OF EXMOUTH

### NOTICE OF ANNUAL GENERAL MEETING OF ELECTORS

In accordance with Section 20 of the Local Government Act 1995, the Shire of Exmouth hereby gives notice to electors of the Annual Meeting of Exmouth.

The meeting will be held on Thursday 2 February 2023 at 6:00 pm in the Municipal Reception Centre, Angkor Centre, 2 Tuckers Crescent, Exmouth.

- The purpose of the meeting is to:
  - Confirm minutes of the previous General Meeting of Exmouth meeting held on 26 February 2022;
  - Receive and adopt the 2022/23 Annual Report; and
  - General Business.

Shire of Exmouth electors are invited to attend the meeting in person. Any elector who cannot attend in person is invited to attend the meeting by proxy. Details of how to do so are available on the Shire of Exmouth website at [www.exmouth.wa.gov.au](http://www.exmouth.wa.gov.au).

Ben Lewis  
 CHIEF EXECUTIVE OFFICER

#### SHIRE OF EXMOUTH

### Proposed Local Laws

**Public Places and Local Government Property Local Law**

The Shire of Exmouth is seeking public feedback on proposed Local Laws to regulate the use, control and management of public places and local government property. The proposed Local Laws are:
 

- Local Law No. 1 of 2023: Public Places and Local Government Property
- Local Law No. 2 of 2023: Public Places and Local Government Property

Feedback can be provided via the Shire of Exmouth website until 15 February 2023.

Ben Lewis  
 CHIEF EXECUTIVE OFFICER

#### SHIRE OF EXMOUTH

### EMPLOYMENT

#### Clinical Nurse Manager

Government of Western Australia  
 Department of Justice

Job Number: 64351927  
 Location: Exmouth, Exmouth Regional Area

The Department of Justice is seeking a suitably qualified and experienced Clinical Nurse Manager to provide strategic leadership and clinical support to the Exmouth Regional Area. The successful candidate will be responsible for the delivery of high quality patient care and ensuring compliance with relevant legislation.

For more information, please contact the Recruitment Manager at [recruitment@waj.wa.gov.au](mailto:recruitment@waj.wa.gov.au)

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Midwest Time – 18 January 2023

24 MIDWEST TIMES midwesttimes.co.uk WEDNESDAY 18 JANUARY 2023

ENVIRONMENT PLANS NOTICE

You are being notified that the Environment Plan 2022 is being approved by the Environment Agency for the Scarborough Seabed Intervention and Trunkline Installation.

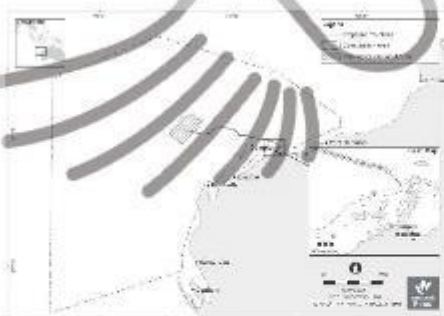
Table with 2 columns: Activity Name and Location. Row 1: Scarborough Seabed Intervention and Trunkline Installation. Row 2: Scarborough Seabed Intervention and Trunkline Installation.

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The Environment Agency has approved the Environment Plan 2022 for the Scarborough Seabed Intervention and Trunkline Installation. This plan sets out the measures to be taken to avoid, prevent, reduce, compensate for, and mitigate any adverse effects on the environment.



Consultation Feedback: We have received feedback from stakeholders regarding the Environment Plan 2022. Your comments are being taken into account in the final version of the plan. For more information, please contact the project team.

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Page 90 — North West Telegraph January 30, 2023
northwesttelegraph.com.au

### ENVIRONMENT PLANS NOTICE

Woodside Energy Services (Pty) Ltd (WES) is currently developing several offshore oil and gas developments in the Scarborough region of the North West Shelf.

**Scarborough 4000 Block - Marine Habitat Conservation Plan**

<b>Activity summary:</b>	Install and commission the Scarborough 4000 Block and the associated infrastructure.
<b>Location:</b>	Offshore in the Scarborough region, approximately 100km off the coast.
<b>Commencement timing:</b>	11/2022 pending approvals, with a peak of 12 months construction.
<b>Estimated duration:</b>	11/2022 to 01/2024, with a peak of 12 months construction.
<b>Consultation commenced:</b>	May 2022. First EP submission to NOP/DEW. Consultation period.

**Scarborough 5000 Block - Marine Habitat Conservation Plan**

<b>Activity summary:</b>	Install and commission the Scarborough 5000 Block and the associated infrastructure.
<b>Location:</b>	Offshore in the Scarborough region, approximately 100km off the coast.
<b>Commencement timing:</b>	11/2022 pending approvals, with a peak of 12 months construction.
<b>Estimated duration:</b>	11/2022 to 01/2024, with a peak of 12 months construction.
<b>Consultation commenced:</b>	May 2022. First EP submission to NOP/DEW. Consultation period.

**Scarborough Seabed Intervention and Trunkline Installation Environment Plan**

<b>Activity summary:</b>	Install and commission the Scarborough Seabed Intervention and Trunkline Installation.
<b>Location:</b>	Offshore in the Scarborough region, approximately 100km off the coast.
<b>Commencement timing:</b>	11/2022 pending approvals, with a peak of 12 months construction.
<b>Estimated duration:</b>	11/2022 to 01/2024, with a peak of 12 months construction.
<b>Consultation commenced:</b>	May 2022. First EP submission to NOP/DEW. Consultation period.

**Scarborough 6000 Block - Marine Habitat Conservation Plan**

<b>Activity summary:</b>	Install and commission the Scarborough 6000 Block and the associated infrastructure.
<b>Location:</b>	Offshore in the Scarborough region, approximately 100km off the coast.
<b>Commencement timing:</b>	11/2022 pending approvals, with a peak of 12 months construction.
<b>Estimated duration:</b>	11/2022 to 01/2024, with a peak of 12 months construction.
<b>Consultation commenced:</b>	May 2022. First EP submission to NOP/DEW. Consultation period.

**Figure 4. Description of the Scarborough 4000 Block and the associated infrastructure, including details of the location of the seabed intervention and trunkline installation, and the location of the Scarborough 4000 Block and the associated infrastructure.**



**Consultation, Participation and Feedback**

Woodside Energy Services (Pty) Ltd (WES) is currently developing several offshore oil and gas developments in the Scarborough region of the North West Shelf. WES is committed to transparency and public participation in the development process. WES will provide regular updates on the progress of the developments and will seek feedback from the community. WES will also provide opportunities for the community to provide input into the development process. WES will also provide opportunities for the community to provide input into the development process.

For more information, please visit [www.woodside.com.au/scarborough](http://www.woodside.com.au/scarborough) or contact WES on 1800 444 801.

**PUBLIC NOTICES**

Medford Shooters Club AGM on 20th Jan. 7.30pm. 18-19th Jan. 8.30am. 20th Jan. 8.30am.

# Advertise your WEEKLY SPECIALS

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Geraldton Guardian – 20 January 2023

30 GERALDTON GUARDIAN

geraldtonguardian.com.au

FRIDAY, JANUARY 20, 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Services Pty Ltd (WES) is proposing a seabed intervention to install a new seabed cable for the Scarborough Seabed Intervention and Trunkline Installation Environment Plan.

Seabed Intervention and Trunkline Installation Environment Plan

Table with 4 columns: Activity category, Location, Commencement date, and Completion date. Row 1: Seabed Intervention and Trunkline Installation Environment Plan, Scarborough Seabed, 2023, 2023.

Seabed Intervention and Trunkline Installation Environment Plan

Table with 4 columns: Activity category, Location, Commencement date, and Completion date. Row 1: Seabed Intervention and Trunkline Installation Environment Plan, Scarborough Seabed, 2023, 2023.

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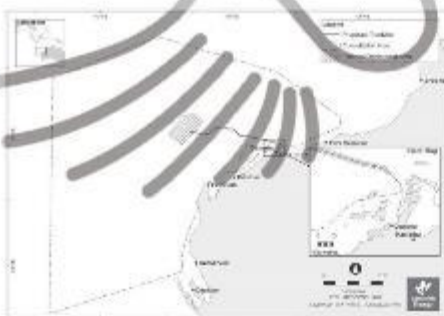
Seabed Intervention and Trunkline Installation Environment Plan

Table with 4 columns: Activity category, Location, Commencement date, and Completion date. Row 1: Seabed Intervention and Trunkline Installation Environment Plan, Scarborough Seabed, 2023, 2023.

The above information is provided for your information and to allow you to make any comments or objections to the proposed activity.

Woodside Energy Services Pty Ltd (WES) is proposing a seabed intervention to install a new seabed cable for the Scarborough Seabed Intervention and Trunkline Installation Environment Plan.

Woodside Energy Services Pty Ltd (WES) is proposing a seabed intervention to install a new seabed cable for the Scarborough Seabed Intervention and Trunkline Installation Environment Plan.



Contact Information: Woodside Energy Services Pty Ltd, PO Box 100, Scarborough WA 6150. Phone: 08 9447 1000. Website: www.woodsideenergy.com.au

EMPLOYMENT

George Giudice Law Chambers are seeking a person for a reception/administrative role to be trained in paralegal matters. This role will involve a variety of legal and administrative work.

Employment

The City of Greater Geraldton actively welcomes, invites and encourages the participation of all people in its workforce. The City values applications from all people, regardless of their race, ethnicity, gender, age, sexual orientation, disability, or other characteristics.

Health and Beauty

ASIAN MASSAGE - Enjoy a relaxing body massage with the best service. Hours: 9am - 6pm. Ph: 0415 280 522

Adult Services

GERALDTON MASSAGE - Relaxation & Stress Relief. Ph: 0453 291 637

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Get your car SOLD with a mix of Print & Online ads. Please phone Classifieds



Show off your results HERE!

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## 6.2 General Environment Plan social media campaign – Geraldton to Derby

### Facebook Campaign - May 2023

A Facebook information campaign was targeted along the coastline from Geraldton to Derby to ensure it reached all communities adjacent to the EMBA. Geotargeting locations are distributed along the coast, with 80 km radiuses around towns, cities and shires.

Geotargeting points were also included for spaces between towns, cities and shires to ensure no areas were missed – you'll see below there are latitude and longitude references for those locations.

As at 9:00am Monday, 29 May 2023

**Ad reach:** 21,494 users

**Impressions:** 139,972 views

**Clicks through to *Consultation Information* page:** 619 link clicks

#### Geotargeting locations:

- Broome (+80 km)
- Carnarvon (+80 km)
- Denham (+80 km)
- Exmouth (+80 km)
- Geraldton (+80 km)
- Onslow (+80 km)
- Port Hedland (+80 km)
- Karratha (+80 km)
- Latitude -17 Longitude 122.65 Dampier Peninsula (+80 km)
- Latitude -22.75 Longitude 114.10 Exmouth Gulf (+80 km)
- Latitude -18.96 Longitude 121.94 Gingerah (+80 km)
- Latitude -27.85 Longitude 114.25 Kalbarri National Park (+80 km)
- Latitude -21.32 Longitude 116.03 Mardie (+80 km)
- Pardoo (+80 km)
- Latitude -20.94 Longitude 117.83 Sherlock (+80 km)
- Latitude -26.96 Longitude 113.95 Tamala (+80 km)
- Latitude -19.88 Longitude 121.15 Telfer (+80 km)
- Latitude -17.52 Longitude 123.56 Willare (+80 km)
- Latitude -22.43 Longitude 114.93 Yannarie (+80 km)



**Woodside Energy**  
Sponsored

**Would you like to know what Woodside has planned on land and sea?**

We'd like to talk with you.

To find out about our current and proposed work and to share your views with Woodside on your relevant location, activities or interests visit: [woodside.com/consultation-activities](http://woodside.com/consultation-activities).

Alternatively, you can contact us at [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au) or on 1800 442 977.

 Woodside Energy

[woodside.com](http://woodside.com)  
**Woodside's consultation activities**

**Learn more**



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**Would you like to know what Woodside has planned on land and sea?**

We'd like to talk with you.

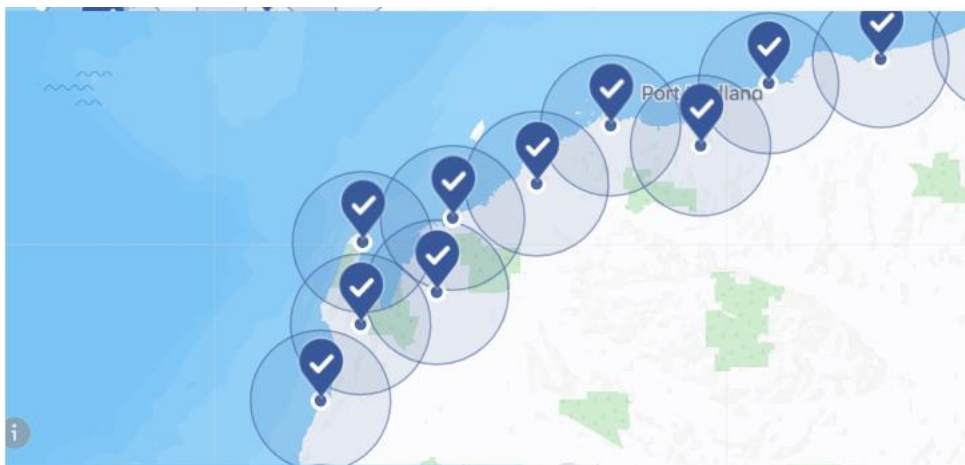
To find out about our current and proposed work and to share your views with Woodside on your relevant location, activities or interests visit: [woodside.com/consultation-activities](http://woodside.com/consultation-activities).

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 Woodside Energy

**Learn more**







### Facebook Campaign – June 2023

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*As at 11.30am 30 June 2023*

**Reach:** 41,118

**Impressions:** 285,366

**Link clicks:** 1,236

#### **Geotargeting locations:**

- Broome (+80 km)
- Carnarvon (+80 km)
- Denham (+80 km)
- Exmouth (+80 km)
- Geraldton (+80 km)

- Onslow (+80 km)
- Port Hedland (+80 km)
- Karratha (+80 km)
- Latitude -17 Longitude 122.65 Dampier Peninsula (+80 km)
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**Woodside's consultation activities** [Learn more](#)

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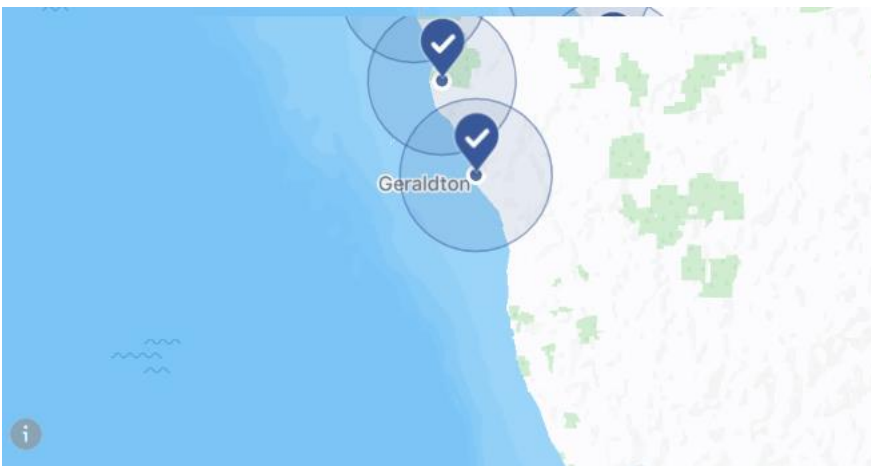
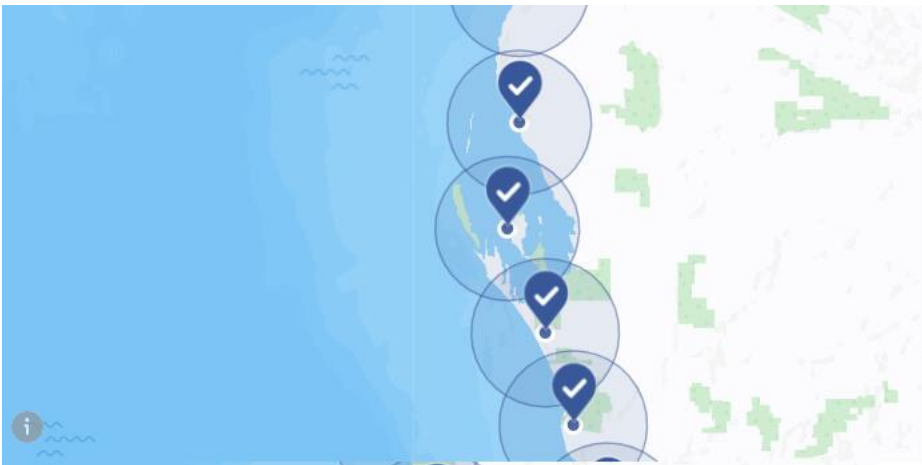
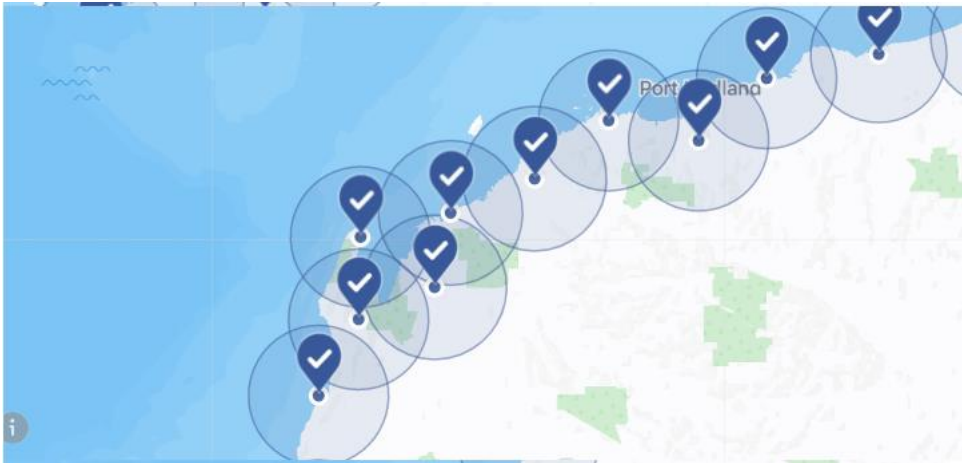
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or on 1800 442 977.

[Learn more](#)







### 6.3 Kimberley region community activities

#### 6.3.1 Community information sessions – Broome, Derby and Kununurra – 12, 13 and 15 June 2023 respectively

##### **Geotargeted social media campaign – June 2023**

A Facebook information campaign was targeted in Kununurra, Broome and Derby to ensure it reached communities where the Consultation Information Sessions were planned to be

held. Geotargeting points were also included for spaces between towns, cities and shires to ensure no areas were missed – you'll see below there are latitude and longitude references for those locations.

As at 3:30pm, Thursday 15 June 2023

**Kununurra:**

**Dates:** 8 June 2023 – 14 June 2023

**Total reach:** 12,228

**Total impressions:** 14,486

**Geotargeting locations:**

- 80km radius around Kununurra
- 80km radius around Durack
- 80km radius around Warmun
- 80km radius around Wyndham

**\* Locations**

Reach people living in or recently in this location. **i**

Australia

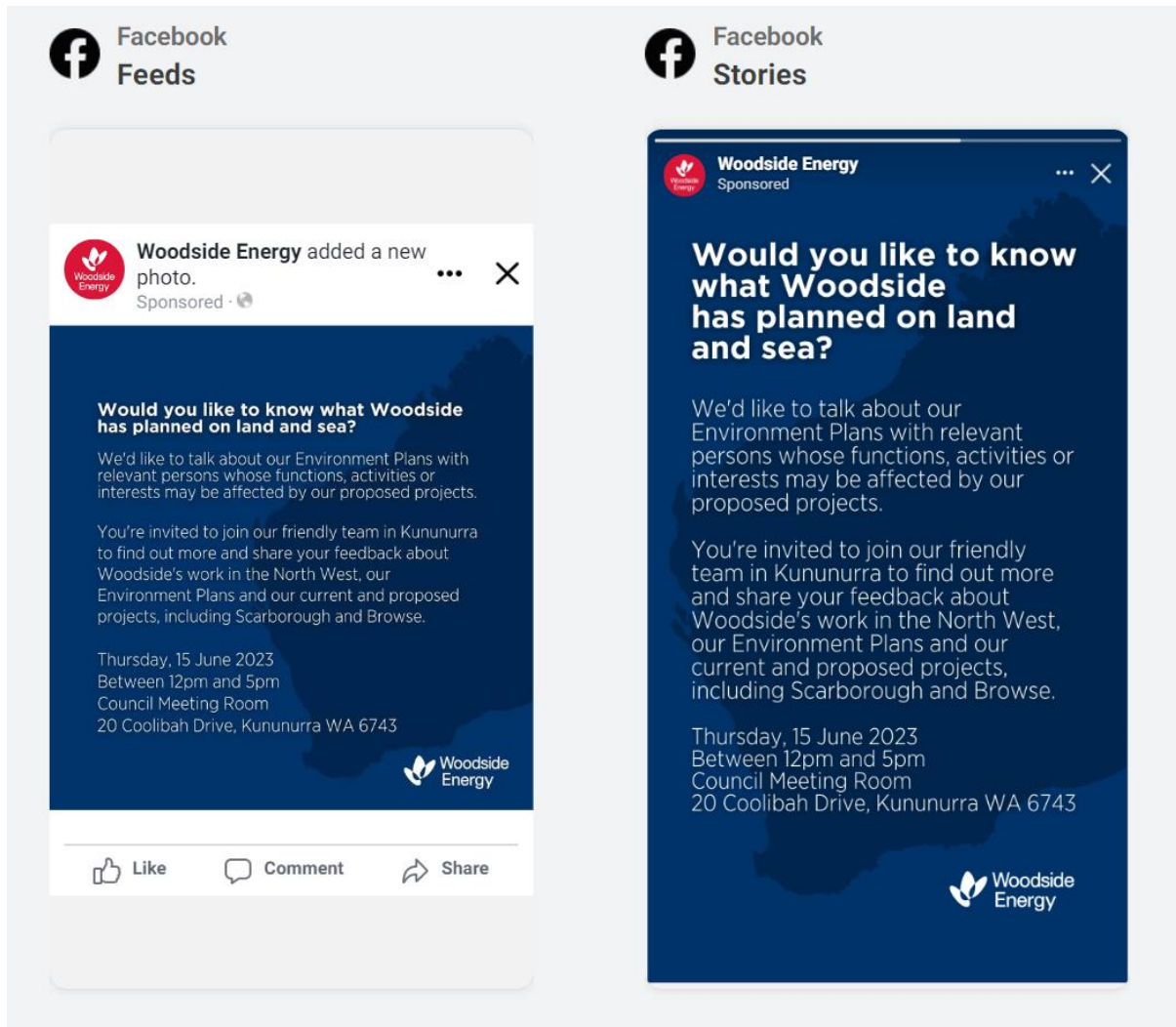
- ✓ Durack, Western Australia City + 80 km ▼
- ✓ Kununurra, Western Australia City + 80 km ▼
- ✓ Warmun, Western Australia City + 80 km ▼
- ✓ Wyndham, Western Australia City + 80 km ▼

✓ Include ▼ 🔍 Search locations Browse

Drop Pin

[Add locations in bulk](#)





**Broome:**

**Dates:** 8 June 2023 – 12 June 2023

**Total reach:** 19,220

**Total impressions:** 22,665

**Geotargeting locations:**

- 80km radius around Broome
- 80km radius around Dampier Peninsula
- 80km radius around area between Broome and Dampier Peninsula (Waterbank area)
- 80km radius around area south of Broome (Lagrange area)

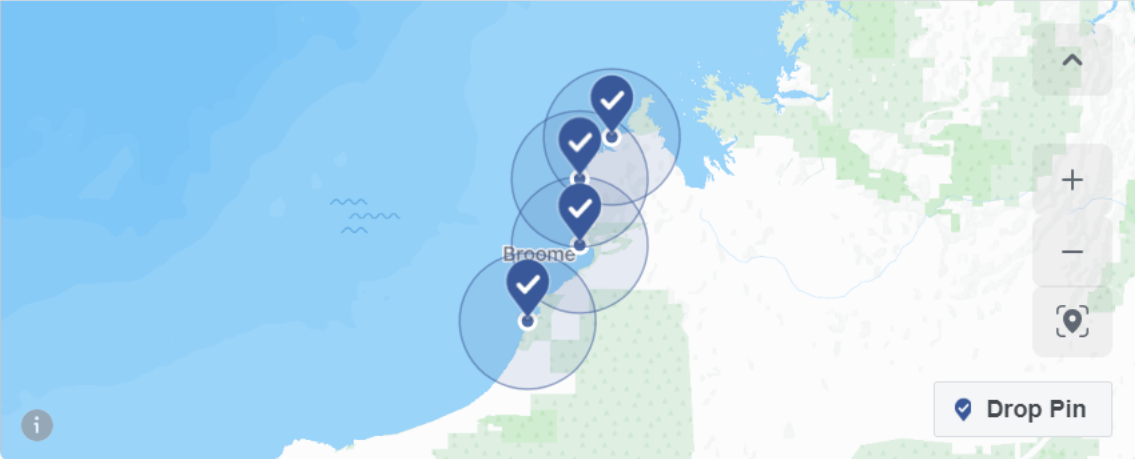
\* **Locations**

Reach people living in or recently in this location. **i**

Australia

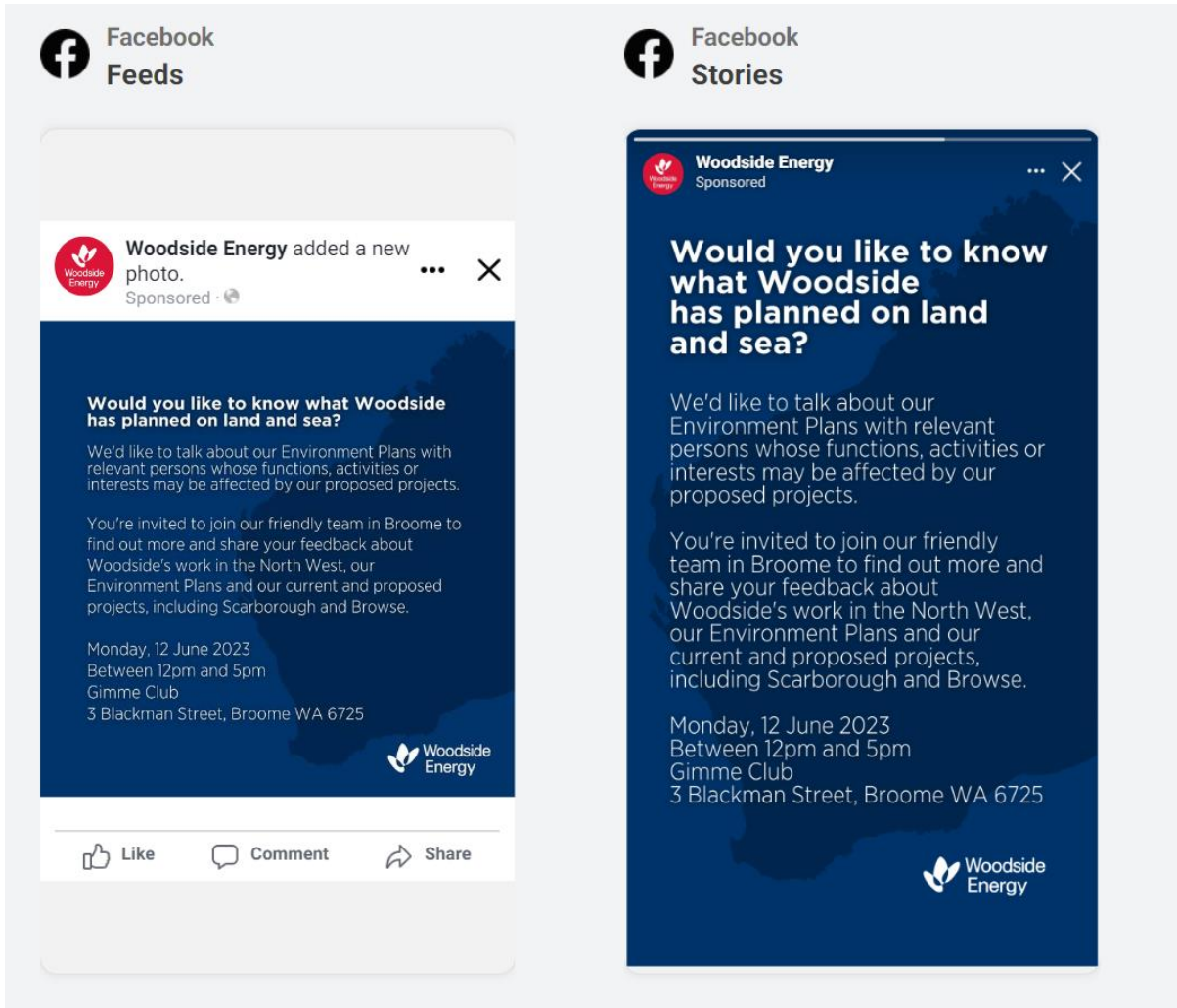
- (-16.8326, 122.5818) + 80 km ▼
- (-17.2597, 122.2412) + 80 km ▼
- (-18.7572, 121.6699) + 80 km ▼
- Broome, Western Australia City + 80 km ▼

Include ▼  Browse



The map shows the coastal town of Broome in Western Australia. Four blue location pins are placed in a vertical line along the coast, each with a white checkmark. A 'Drop Pin' button is visible in the bottom right corner of the map area.

[Add locations in bulk](#)



**Derby:**

**Dates:** 8 June 2023 – 13 June 2023

**Total reach:** 4,758

**Total impressions:** 5,773

**Geotargeting locations:**

- 80km radius around Derby
- 80km radius around Kimbolton

**\* Locations**

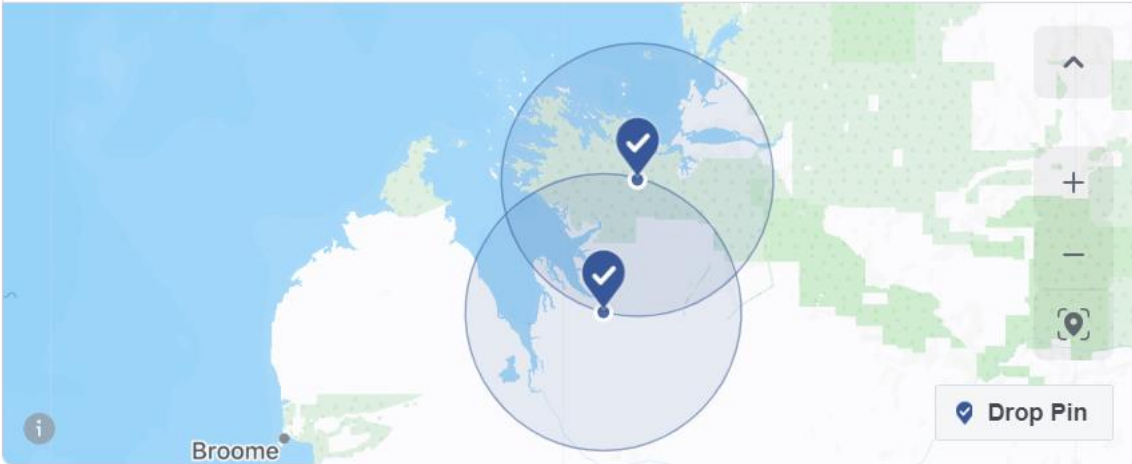
Reach people living in or recently in this location. ⓘ

Australia

✓ Derby, Western Australia City + 80 km ▼

✓ Kimbolton, Western Australia City + 80 km ▼

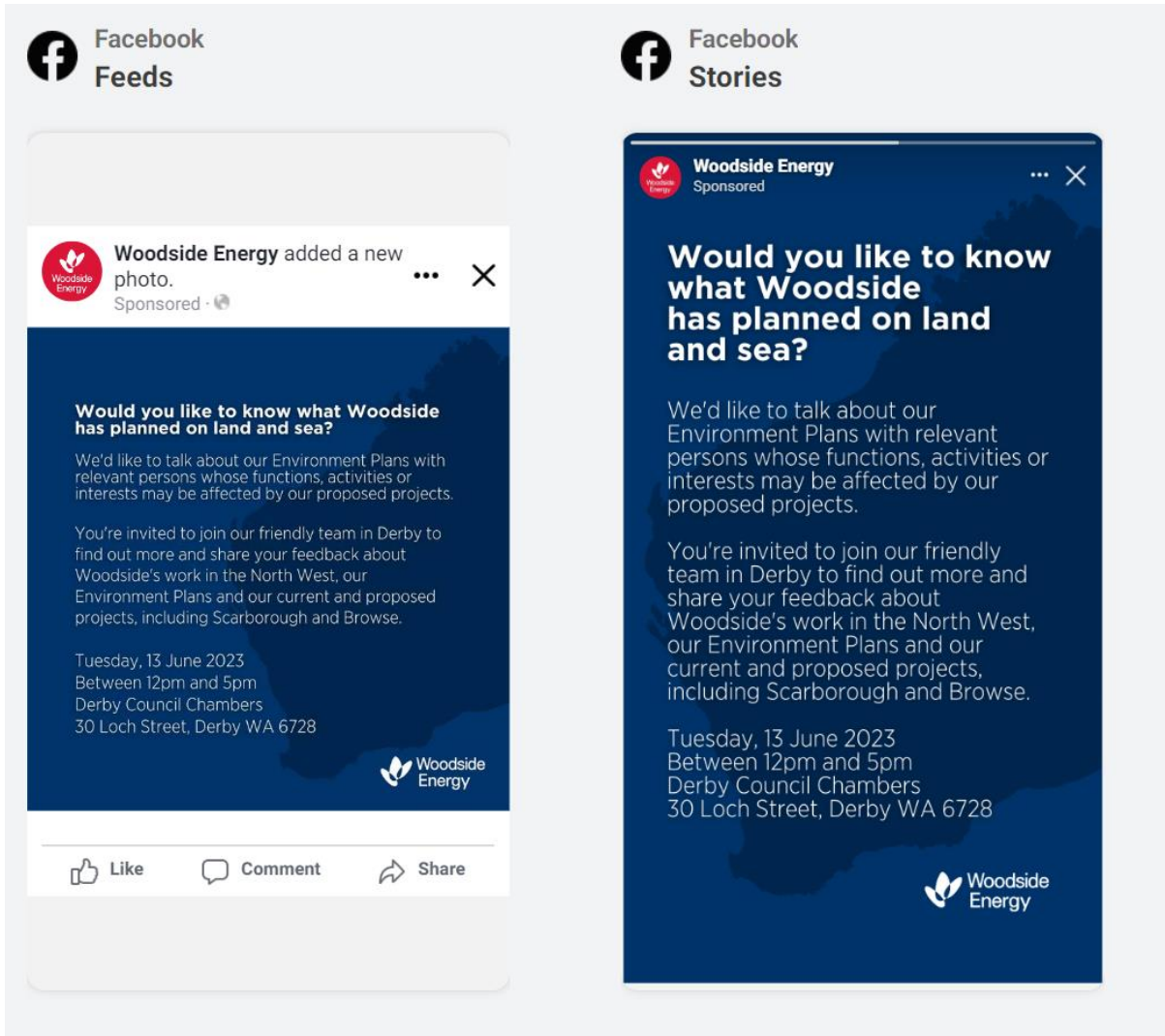
✓ Include ▼ 🔍 Search locations Browse



Broome

Drop Pin

Add locations in bulk





Community information sessions - Newspaper advertisements

Broome Advertiser – 1 June 2023

Broome Advertiser  
Thursday, June 1, 2023

broomead.com.au

**NEWS 9**



The site of the proposed wellness centre development at Frederick Street.

## Centre to offer medical services and child care

**CAIN ANDREWS & KATYA MINNS**

The Shire of Broome has approved a development application for a health and wellness centre which will feature a creche able to look after up to 100 children at a time.

The centre will also supply accommodation for medical centre staff with four short-term units to be built in the north-eastern corner of the lot.

The health and wellness centre will feature a dental practice, a GP clinic, pharmacy, beauty clinic, cafe, psychologist's office, physiotherapy office and two medical imaging tenancies with the project estimated to cost just over \$6.1m.

The development applicant will also have to donate just over \$30,000 for public art or to develop a public art installation equal to that value, thanks to the Shire's local planning scheme.

The site will be at Frederick Street between the Broome Boulevard Shopping Centre and the Broome Recreation and Aquatic Centre where the St Martin de Porres Re-engagement school sits. The school is now searching for a new location, according to the Shire agenda.

Shire president Desiree Male said the development was a step in the right direction for the tourist town.

"To have a private developer come in and put a proposal forward to build something (as) significant as this is fantastic," she said.

"Across the board, we are lacking dreadfully (in child care) and anything that can add to the shortfall is a benefit."

"We're really supportive and thankful that we have attracted this sort of investment in town and we look forward to when it opens."

# Tanami sealing set for 10-year build timeline

**DAN JERVIS-BARDY**

The sealing of the Tanami track in northern WA will take a decade to complete, the Albanese Government has confirmed.

But Infrastructure Minister Catherine King's office is defending the timeframe, saying it would ensure a consistent and manageable stream of work for local contractors and time for proper consultation with communities along the route.

It was revealed during Senate estimates that \$434 million in Commonwealth funding to seal the Tanami was spread out across the next 10 years, suggesting that was how long it would take to finish the much-needed upgrade.

Sealing the track promises

huge social and economic benefits for communities in the East Kimberley, including making it cheaper and easier to transport goods.

The Opposition slammed the decade-long timeline as "completely unacceptable", accusing both the Albanese and McGowan governments of failing to prioritise the project.

Ms King's office confirmed — and defended — the plan in a statement to The West Australian.

"A 10-year rolling delivery time frame will ensure a steady and sustainable pipeline of works for local construction crews," a spokeswoman said.

"As a large, unsealed and remote road, a staged approach over time also allows for the necessary

## YOU'RE INVITED TO COME AND TALK WITH WOODSIDE ABOUT OUR ACTIVITIES.

Woodside is preparing Environment Plans and wants to discuss these with relevant persons, before submission to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

**Activities**

- Plug and Abandonment Decommissioning Activities for the Stybarrow field, located about 53 km north-west of Exmouth.
- Pyxis Drilling and Subsea Installation, located about 170 km north west of Dampier.

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Broome	Derby	Kununurra
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For more information: [Feedback@woodside.com.au](mailto:Feedback@woodside.com.au)  
or phone toll free 1800 442 977  
[woodside.com](http://woodside.com)










### BOARDING INFORMATION EVENING

13<sup>th</sup> June - Oaks Broome Hotel  
**Broome - 6-8pm**

**Bookings are essential!**  
<https://mazenodregionalists2023.paperform.co>

Mazenod College, 55 Gladys Road Lesmurdie (08) 9291 1500 | [www.mazenod.wa.edu.au](http://www.mazenod.wa.edu.au)

St Brigid's College, 200 Lesmurdie Road Lesmurdie (08) 9290 4200 | [www.sbc1.wa.edu.au](http://www.sbc1.wa.edu.au)

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# Surf club rides crest of wave



CAM ANDREWS

The new Broome Surf Life Saving Club is set to open to the public, with the main construction work of the \$5.5m project complete.

The club, due open to the public by late July, features a range of new facilities including new and increased storage areas, an education and function room, a new gym, bar and public toilets and showers. And the new facilities are already drawing in new members.

Broome Surf Life Saving Club Building director Rob Aristel said he was excited to see the building near completion after working on the project for the better part of a decade.

"In 2016 we started to get the project off the ground as the old building had reached the end of its life. What we're trying to do is make the club fully sustainable so it will be a lot easier for us to replace equipment, attract more members and even expand our patrolling time."

Broome Surf Life Saving Club manager Lauren Henderson said the new building would allow the



Bar manager Chris Andrzejczek, BSLSC chairperson Bec Farkunga, BSLSC Education director Carlie Selten, BSLSC Building director Rob Aristel, Broome Surf Life Saving Club manager Lauren Henderson. Picture: Cam Andrews

club to better service the community.

"The new facilities basically enhance our ability to achieve our core mission, which is to keep the community safe," she said. "It also enables us to purchase more equipment and have better training in our training rooms."

Ms Henderson said the new club was already attracting more members. "We've got the highest number of rippers enrolments this year than we've had since pre-COVID," she said. "There's close to 200 new enrolments and I think the excitement around the new club is part of the reason for that."

The new building doesn't just benefit our

club, but benefits the whole community as well."

Mr Aristel said the build wouldn't have been possible without sponsorship. "I'd like to thank Surf Life Saving WA and all of the sponsors for their ongoing support, we couldn't have done it without you," he said.

Major Sponsors for the project include Totally Workwear, Cleanaway, Lion, Broome Plumbing and Gas and Galvins Plumbing Supplies. Major contractors involved in the project include CWD Builders, Laird Tran Studios and the Shire of Broome. See more pictures inside the club at broomead.com.au

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woodside.com



## Man jailed for robberies on hotels

KATYA MURIN

The accomplice of a gang who acted as a "lookout" for his fellow offenders at the Oaks Hotel, a few days after breaking into and stealing alcohol from the Roebuck Bay Hotel, has been sentenced to 31 months imprisonment.

Anton Caleb Joseph Galova faced Broome's District Court on May 29 and pleaded guilty to six counts of aggravated burglary and stealing.

The court was told the 24-year-old was out drinking with friends and family at a residence before being convinced to accompany four other men to break into the Roebuck Bay Hotel at about

3am on March 18, 2022. Not wanting to be left behind, he went along with the group — helping peel open a metal door to one of the bars within the hotel and stealing 15 bottles of wine.

Three days later, he and the group went to Oaks Hotel on Robinson Street about 2am with the intention to burgle the bar for alcohol.

Galova kept a lookout for security as his fellow offenders used an axe to break the glass of the restaurant to gain entry into the bar, stealing bottles of liquor off the shelves.

An hour after leaving the hotel, the group returned for more alcohol but security was already investigating

the scene and had called police.

The police approached the men leaving the hotel on Guy Street, uncovering bottles of alcohol in their bags and immediately took them into custody.

Defence lawyer Nick Brookes said his client was "not a sophisticated individual" and that Galova did not believe he was fully involved in the crime, hence his co-operation with police when providing statements against the others involved.

District Court Judge Michael Bowden sentenced Galova to 31 months jail, backdated to March 21, 2022. He will be eligible for parole after serving 15½ months.

# Unravel Travel Sale

**BE INSPIRED. BOOK NOW. SALE ENDS JUNE 14, 2023.**

**AIRFARES START FROM \$240.00\***

We fly to Darwin and Kununurra daily! Airfares include FREE checked baggage\*

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Kimberley Echo – 1 June 2023

6 NEWS
Kimberley Echo
Thursday, June 1, 2023

# Muster ends with Party in the Park







**GALLY DUPE**

The East Kimberley's biggest festival came to a big close when hundreds gathered at Celebrity Tree Park for the Ord Valley Muster's Horizon Power Party in the Park.

The event — likely to become a staple of the Muster — was a true East Kimberley celebration, with performances, workshops, displays and fun for the family with local and guest entertainment.

Among the line-up was belly dancing, the East Kimberley College Primary School Choir, the Wild Brumby Line Dancers, the East Kimberley Community Choir, and the East Kimberley College Band.

Also featuring were bands Cruise Control, Girls from Oz and the Band of the First Brigade, from Darwin.

But arguably the most popular activity at this year's event was the Sobby Silver Search, a new rendition of what was for decades called the Diamond Dig.

Like many years before, participants took to three giant sand pits to dig for pop sticks marked with numbers corresponding with various prizes, which ranged from pond lights and a truck wash, to a stunning silver necklace.








There were three categories, a toddler section, kid section and adult section.

Rainer Winkler's persistence paid off, and after many attempts he won the top prize in the Ord Valley Muster Silver Search — a custom designed necklace designed by Kimberley Fine Diamonds and valued at \$1200.

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woodside.com



## The laughs just kept coming at Comedy in the Park show

**GALLY DUPE**

It was a night of side-splitting laughter at Kununurra's sold out Comedy in the Park, with a huge crowd of 900 turning out to enjoy the highlights of the Boab Meats Ord Valley Muster.

The comedy line-up was hand-picked by the festival organisers to ensure the laughs were non-stop all night, and included comedians Steph Tisdell, Chris Franklin, Bev Killick and Fabian Woods.

It was a global audience at this year's Comedy in the Park, with guests The Kimberley Echo spoke with balling from across Australia and as far away as Oregon in the US.

Hosted by the hilarious self-confessed yobbo Franklin, the crowd roared with laughter listening to his mischievous antics and epic stories, tapping into everyone's inner bogan.

From his flannelette shirt to his double plucker thongs, Franklin's "Hoganesque" style of comedy touched on the delicate issues of discovering he is one-sixteenth Aboriginal, booze and relationships.

"The audience was brilliant, we've had a great time up here, the Ord Valley Muster has looked after us well," Franklin said.

A proud Nooncar Yamman, Woods had the crowd chuckling with funny tales of traditional names and dances.

Bold, brassy and brutal honest, Killick had everyone shedding tears of laughter with her rough talking and mama jokes about playing loving joggy mothers and grubby teenage boys.

Tisdell ended the show with her self-deprecating humour that kept audience chuckling.



The crowd at this year's Comedy in the Park at the Ord Valley Muster. Picture: Ben Broadwith

Are you dreaming of turning your passion into a thriving small business?  
Or maybe you're already a small business owner in the Kimberley region,  
looking for some extra support and guidance? Whatever your small business needs may be,  
our team of experts is here to help you  
Call us now 1300 572 766

**Kimberley  
Small  
Business  
Support**



Kimberley Echo – 8 June 2023

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**FOR THE LATEST NEWS**  
[kimberleyecho.com.au](http://kimberleyecho.com.au)

# Burney to blitz WA for Voice

DAN JERVIS-BARDY

Minister for Indigenous Australians Linda Burney will next month spend a full week criss-crossing WA to build grassroots support for the Voice to Parliament.

Ms Burney told an audience in Perth on Monday the people of WA had a "big job" in helping the referendum across the line.

In a speech to the Australian Institute of Aboriginal and Torres Strait Islander Studies summit, the minister said she would travel from "Kununurra to Claremont, from Perth to the Pilbara" to listen and talk to voters about the Voice to Parliament.

The rallying cry came as Canning MP Andrew Hastie launches a fundraising drive to position himself as a leading figure in the No campaign. The outcome in WA could be crucial because a majority Yes vote is needed in at least four of the six States to succeed.

Ms Burney recalled the shocking abuse she received when, as a State minister in 2010, she returned to the



Linda Burney

regional NSW town where she grew up.

She revealed how a man, who she suspected went to the same school as her, said: "You know, Linda, the day you were born was one of the darkest days this town has ever seen."

Ms Burney said the "nasty comments" she received in the schoolyard were now directed at her on Twitter and Facebook.

She told the summit it was the First Nations people who were struggling to get their

voices heard, which gave strength to keep prosecuting the case for a Voice to Parliament.

"This referendum is once-in-a-lifetime opportunity," she said.

"We have within our grasp the chance to make a positive change that will last generations."

While Ms Burney and other Government ministers are upbeat about the referendum, polls suggest support is in decline.

The latest News showed fewer than half voters intended to support the constitutional change.

Yes campaign director Dean Parkin said the "tightening in the numbers" was understandable after heated political debate.

"The conversation has been bogged in Canberra politics, in a fair bit of negativity there," Mr Parkin told Sky News.

"That phase is coming to an end and so that will allow us to increase the focus on getting some more cut through on that conversation that's starting to grow significantly in communities."



## One in six Australians experience hearing loss.

Having a hearing test helps to detect the early signs of hearing loss, so we can keep our hearing healthy for longer.

Book a hearing check, talk to a health professional, or visit [health.gov.au/hearing](http://health.gov.au/hearing) for more information.



Australian Government

Authorised by the Australian Government, Canberra

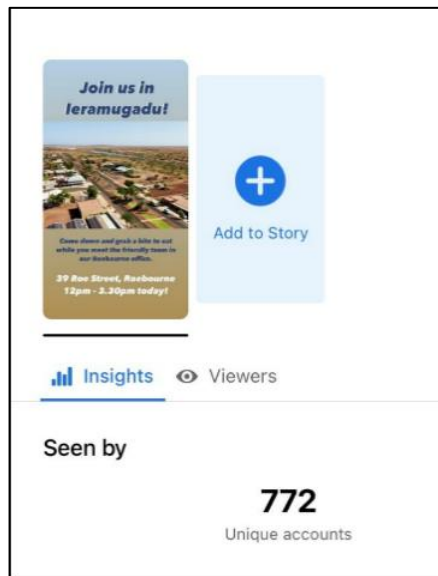
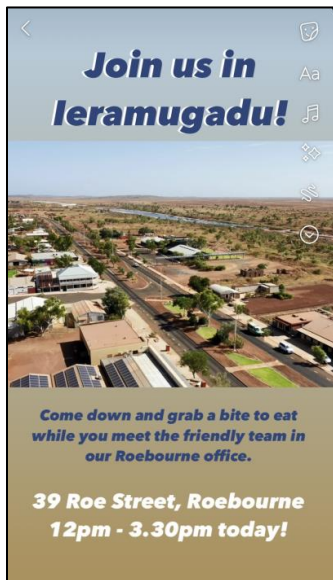
## 6.4 Pilbara region community activities

### 6.4.1 Community information sessions – Roebourne – 5, 10, 19, 24 May 2023

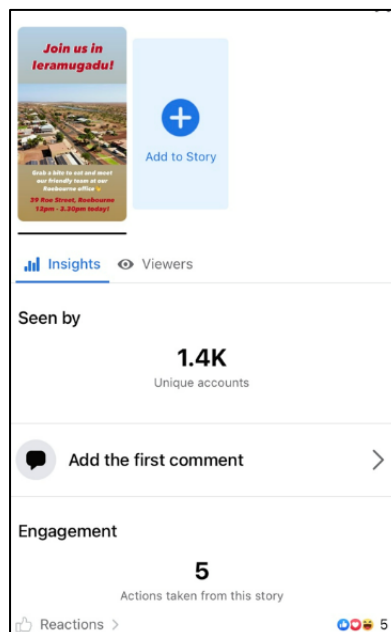
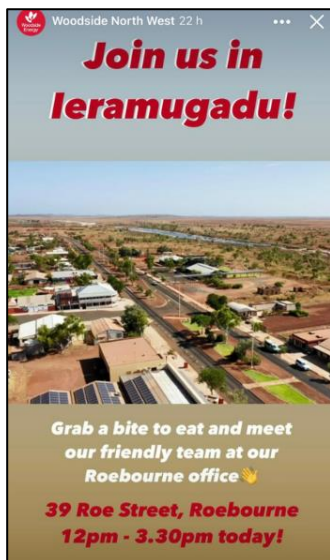
#### Woodside Facebook Stories – May 2023

Facebook stories on Friday 5/5/2023 seen by 772 people (attachment #1 & #2) and another Facebook story on Wednesday 10/5/2023 seen by 1,400 people (attachment #3 & #4).

#1 & #2



#3 & #4



**Woodside Facebook Post**



**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




0




0



0



0



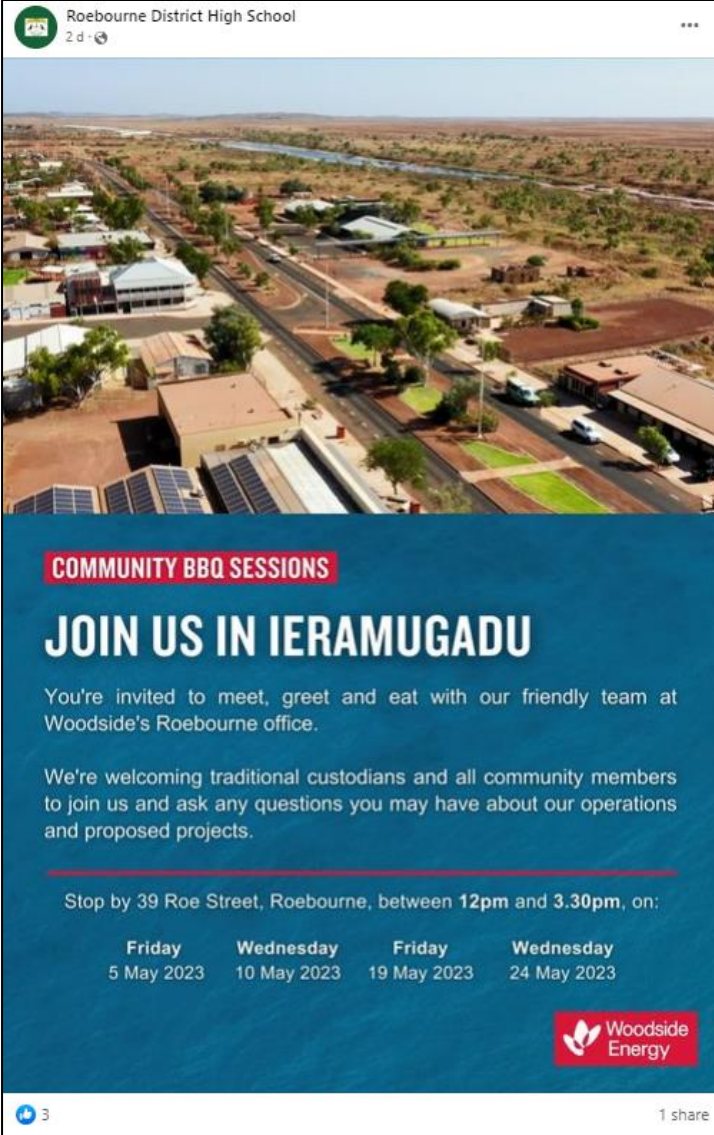
0

Reactions	8
Comments	2



### Third-party Facebook posts

Roebourne District High School Facebook page (23/5/23 and 18/5/23)



The image shows a Facebook post from Roebourne District High School. At the top, there is an aerial photograph of a school campus with several buildings, a road, and a large water reservoir in the background. Below the photo is a blue promotional flyer for Woodside Energy. The flyer has a red header that says "COMMUNITY BBQ SESSIONS" and a large white title "JOIN US IN IERAMUGADU". The text on the flyer invites people to meet, greet, and eat with the friendly team at Woodside's Roebourne office. It also mentions that they are welcoming traditional custodians and all community members to join and ask questions about their operations and proposed projects. The sessions are scheduled for Friday 5 May 2023, Wednesday 10 May 2023, Friday 19 May 2023, and Wednesday 24 May 2023, all between 12pm and 3.30pm at 39 Roe Street, Roebourne. The Woodside Energy logo is in the bottom right corner of the flyer. At the bottom of the Facebook post, there are 3 likes and 1 share.

## Email sent out via Roebourne Community Calendar – 29 April 2023

Posters and invitation extended via the Roebourne Community Calendar which has a very broad reach to all opt-in organisations including local TO groups, NFP, NGO, Government Agencies and other.

FW: All Community Members Welcome

[Redacted]

Wooside Community BBQ Sessions.png  
14 MB

Start your reply all with: [Thank you!](#) [Got it, thanks!](#) [Received, thank you.](#) [Feedback](#)

**From:** Roebourne Community Calendar <roebournecommunitycalendar@y7mail.com>  
**Sent:** Saturday, 29 April 2023 6:23 PM  
**Subject:** Fw: All Community Members Welcome

[Redacted]

**To:** 'roebournecommunitycalendar@y7mail.com' <roebournecommunitycalendar@y7mail.com>  
**Sent:** Friday, 28 April 2023 at 06:30:25 pm AEST  
**Subject:** All Community Members Welcome

[Redacted]

Please can you share the attached on the community calendar.

Woodside are hosting a number of Community BBQ sessions during the month of May which are open to all community members that may wish to drop in and have a chat to learn more about the team and Woodside in general.

We look forward to connecting with community.

Kind regards

[Redacted]

## Posters for Community Information Sessions, Roebourne – 5, 10, 19 and 24 May 2023

The posters were physically posted up on community boards in Roebourne at:

- BP Service Station
- Post Office community board
- Community Resource Centre board at Foundation Food
- Centrelink office at NBAC

Posters dropped posters to:

- REFAP both Ganalili and work site offices
- Police
- Roebourne District High School – Cultural classroom



**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:

<b>Friday</b>	<b>Wednesday</b>	<b>Friday</b>	<b>Wednesday</b>
5 May 2023	10 May 2023	19 May 2023	24 May 2023



## 6.4.2 Community information sessions – Roebourne – 22 June and 19 July 2023

### Posters for Community Information Session, Roebourne – 22 June 2023

On 22 June 2023, Woodside held a Consultation Information Session at its Roebourne office. The session was hosted by members from Woodside's Corporate Affairs and Environment teams and was open for all community members to receive information regarding Woodside's Environment Plans and proposed and planned activities.

Woodside distributed posters advertising the session locally, including:

- Front door and front window of Woodside Roebourne office
- Online distribution via the Roebourne Community Calendar
- Roebourne Police Station provided with printed copy.

Woodside staff also visited the following offices promoting the session:

- Ngarluma and Yindjibarndi Foundation Ltd (NYFL)
- Ngarliyarndu Bindirri Aboriginal Corporation
- Yinjaai-Barni Art
- Foundation Foods.

### Posters for Community Information Session, Roebourne – 19 July 2023

On 19 July 2023, Woodside held a Consultation Information Session at its Roebourne office. The session was hosted by members from Woodside's Corporate Affairs and Environment teams and was open for all community members to receive information regarding Woodside's Environment Plans and proposed and planned activities.

Woodside distributed posters advertising the session locally, including:

- Front door and front window of Woodside Roebourne office, with the open sign and fact sheets on display inside
- On the noticeboard at Roebourne Community Resource Centre (inside the Leramugadu Store (NYFL's Foundation Foods).
- Roebourne CRC
- Pilbara Community Legal Service
- NBAC
- WAPOL
- BP.

Woodside staff also visited the following offices to advise of the community information session and provide posters:


- Ngarluma and Yindjibarndi Foundation Ltd (NYFL)
- Yinjaai-Barni Art Group
- Yandi for Change
- NYFL
- WY Program
- Roebourne Library
- Yindjibarndi Ranger office
- Ashburton Aboriginal Corporation
- A poster was also put up at Cossack.

The posters were physically posted up on community boards in Roebourne on 14 July 2023 at:

- Roebourne CRC
- Pilbara Community Legal Service
- NBAC
- WAPOL
- BP
- Cossack.

Posters were delivered to:

- Yinjaai-Barni Art Group
- Yandi for Change
- NYFL
- WY Program
- Roebourne Library
- Yindjibarndi Ranger office
- Ashburton Aboriginal Corporation.



**COMMUNITY CONSULTATION**

## COMMUNITY INFORMATION SESSIONS IN IERAMUGADU


You're invited to meet, greet and eat with our friendly team in Ieramugadu. We'd like to talk about our Environment Plans with relevant persons whose functions, activities or interests may be affected by our proposed projects.

Stop by to find out more and share your feedback about Woodside's work in the North West, our Environment Plans and our current and proposed projects, including Scarborough and Browse.

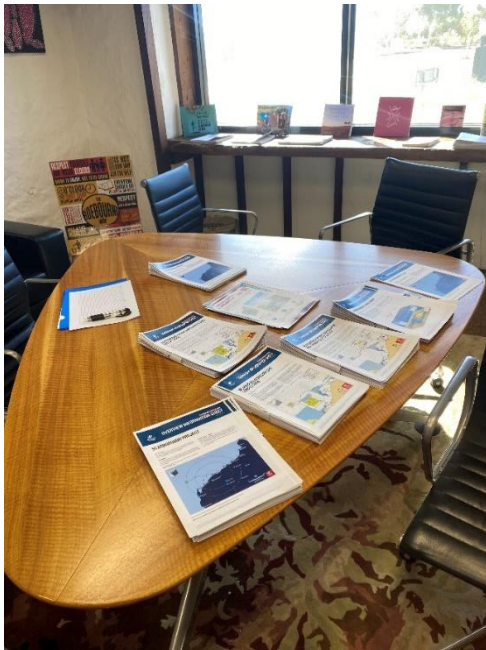
---

Visit 39 Roe Street, Roebourne, between **12pm** and **3.30pm**, on:

<b>Thursday</b> 22 June 2023	<b>Wednesday</b> 19 July 2023
---------------------------------	----------------------------------







### 6.4.3 Community information sessions – Karratha – 28 and 29 June

#### Karratha Community Information Session Facebook post – 28 June 2023

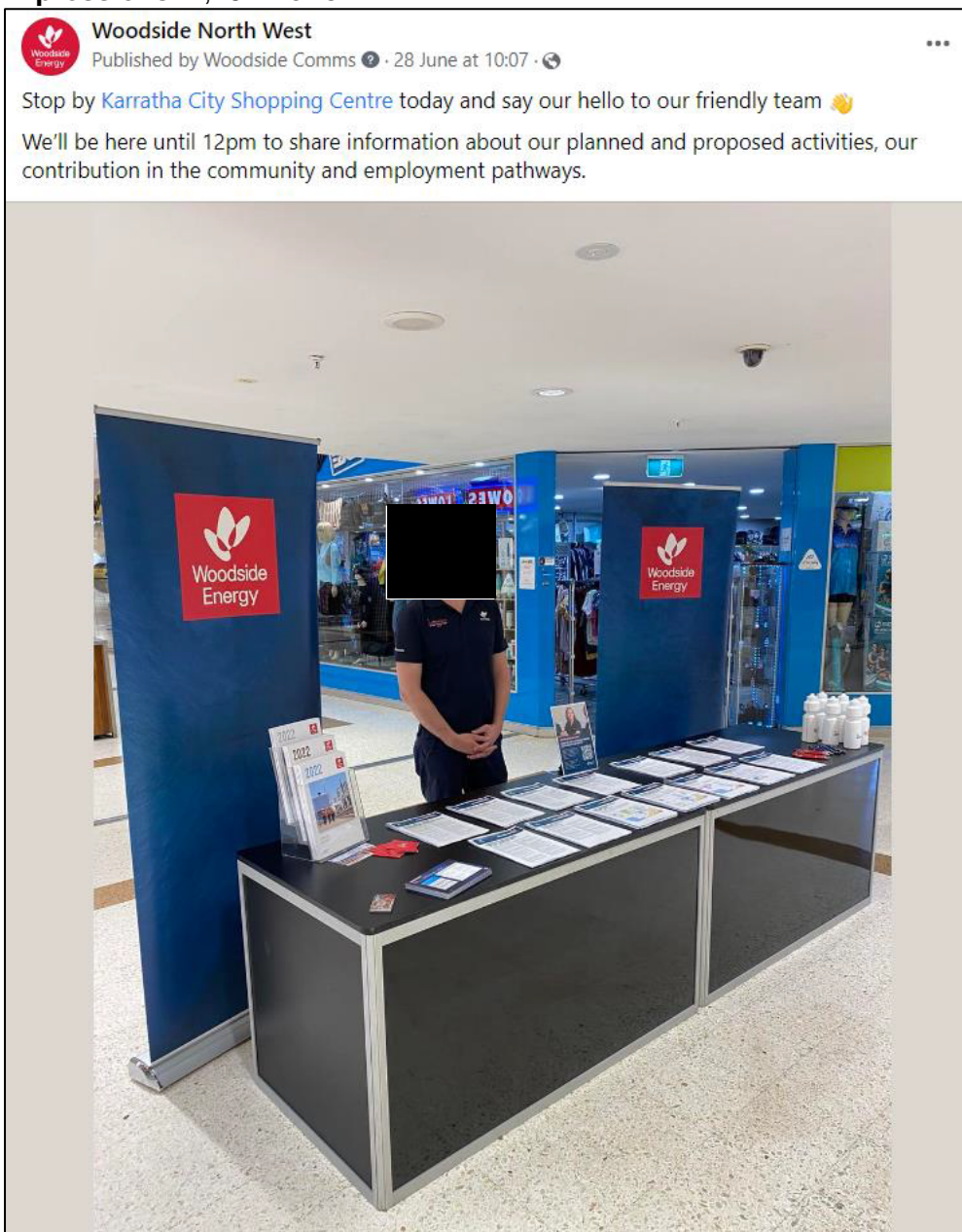
On 28 June 2023, Woodside posted a story on its Woodside North West Facebook account, sharing details of its shopping centre stand where Consultation Information Sheets regarding is planned and proposed activities were available, including the activities proposed under this EP.

**Platform/channel:** Woodside North West (Facebook)

**Date:** 28 June 2023

**Reach:** 1,464 viewers

**Impressions:** 1,464 views





## Karratha Community Information Session Facebook Post – 29 June 2023

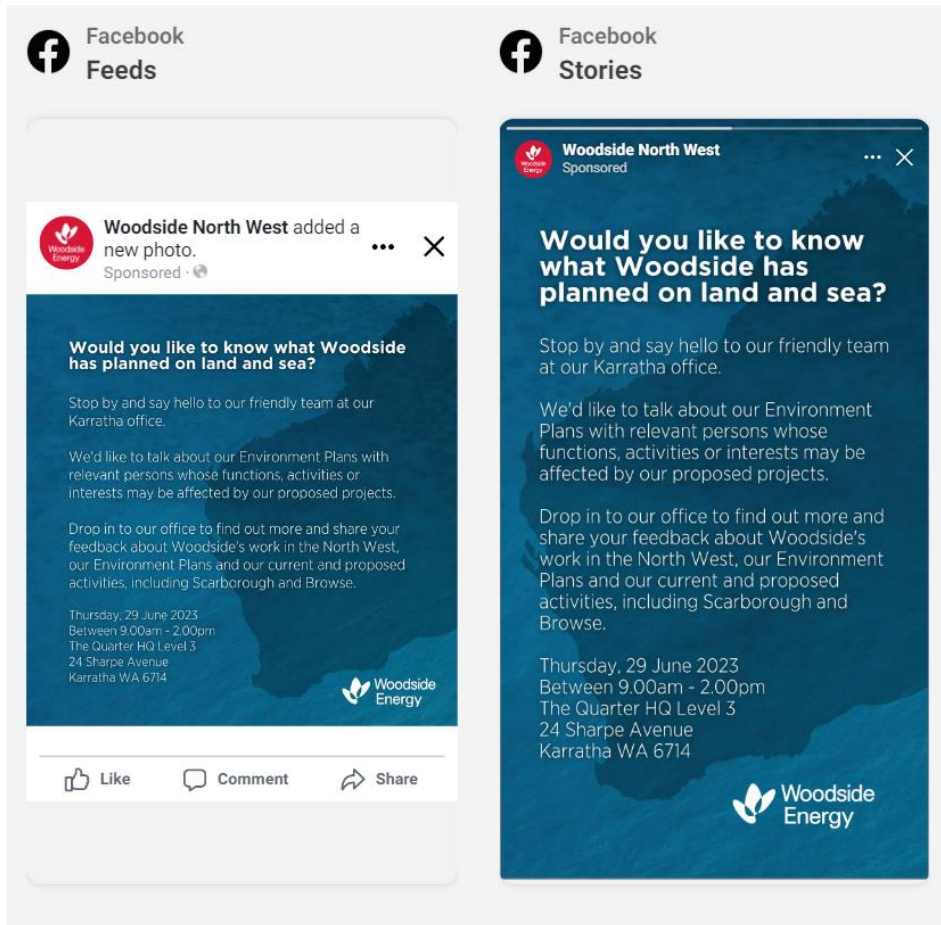
On 29 June 2023, Woodside held a drop-in session at its Karratha town office. The drop-in session was hosted by one of Woodside’s Senior Environmental Advisers and was open for all community members to receive information regarding Woodside’s Environment Plans and proposed and planned activities.

**Dates:** 16 June 2023 – 29 June 2023

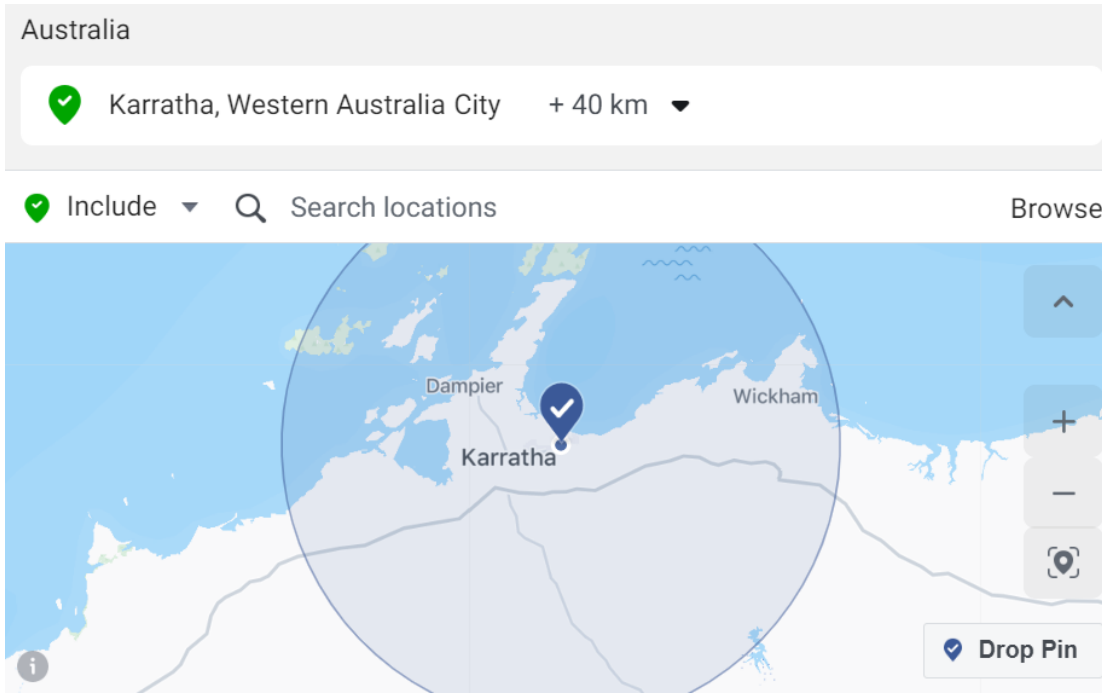
**Geotargeting:** 40km radius around Karratha

**Reach:** 19,240 viewers

**Impressions:** 22,931 views



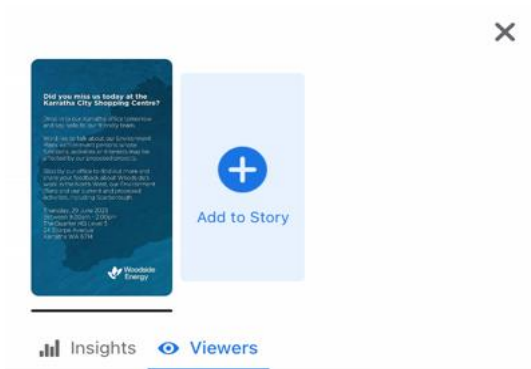
Geotargeting: 40 km radius around Karratha



On 28 June 2023, Woodside posted a story on its Woodside North West Facebook account, sharing details of its drop-in session.

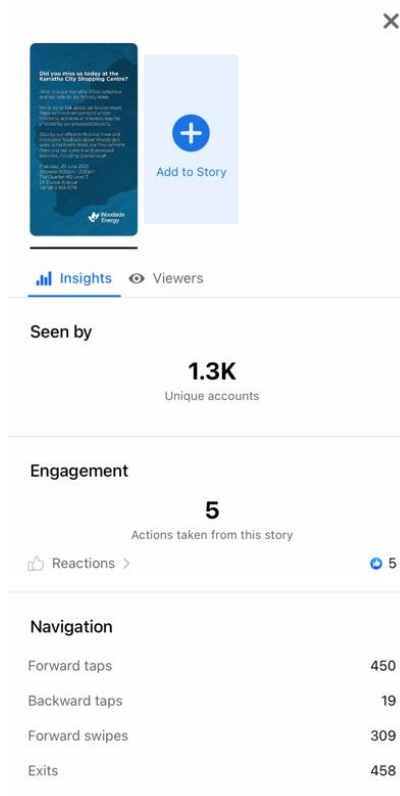
**Reach:** 1,366 viewers

**Impressions:** 22,931 views



**1,334 viewers**

1,334 other people viewed this story. As it was shared to Public, people you're not friends with saw it.



**Karratha Community Information Session – Newspaper advertisement**

Pilbara News – 28 June 2023

Pilbara NEWS  
Wednesday, June 28, 2023

pilbaranews.com.au

NEWS 7



# Rio reaches \$1b Range milestone

**CHEYANNE ENCISO**

Rio Tinto has spent \$1 billion with WA businesses as it progresses the development of its Western Range joint venture with China Baowu Steel Group.

Simon Trott, iron ore chief executive of Rio Tinto, said the \$1b spend marked a considerable milestone.

"Rio Tinto spends billions of dollars with local suppliers across Western Australia and the Pilbara every year, helping support thriving communities across the State by providing local jobs for local people," he said.

The 25 million tonnes-a-year Western Range project will help sustain production of Rio's flagship Pilbara blend product from its existing Paraburdoo mining hub as the Eastern Range project depletes. China Baowu said it was pleased to see the Western Range project progressing smoothly.

Premier Roger Cook said significant projects such as the Western Range reinforced WA as an attractive and secure destination for business and investment.

"I want to commend Rio Tinto and Baowu on this latest project milestone and acknowledge their efforts in investing in WA to ensure WA businesses and workers benefit most," he said.

Rio in March reported it had spent \$2.6b with more than 2400 WA and Indigenous businesses in 2022 as part of its local buying program.

The figure included \$618m with Pilbara-based businesses, \$504m with Indigenous companies across WA, and \$435m with businesses run by traditional owners.

Rio Tinto iron ore chief executive Simon Trott and China Baowu vice-president Hou Angui.



We are hiring

## JOIN THE TEAM!

Here at Pilbara Ports Authority, we are committed to advancing an inclusive and productive workplace where people are valued and respected.

We are proud of the talent and diversity of our workforce. Our people are key to our current and future success. We are seeking individuals, who strive for excellence in all they do and seek out opportunities for growth. In return, we provide generous support for training and professional development.

If this sounds like a workplace you would thrive in, take a look at our current vacancies.

**• Administration Officer – Maintenance – Port Hedland**

Find out more about PPA careers and youth training online via [careers.pilbaraports.com.au](https://careers.pilbaraports.com.au)




**FIND OUT MORE ABOUT OUR PROPOSED ACTIVITIES**

## WOULD YOU LIKE TO KNOW WHAT WOODSIDE HAS PLANNED ON LAND AND SEA?

We'd like to talk about our Environment Plans with relevant persons whose functions, activities or interests may be affected by our proposed projects.

Drop in to our office to find out more and share your feedback about Woodside's work in the North West, our Environment Plans and our current and proposed activities, including Scarborough.

Thursday, 29 June 2023  
Between 9.00am - 2.00pm  
The Quarter HQ Level 3  
24 Sharpe Avenue  
Karratha WA 6714

You can also access our consultation information and provide feedback by scanning the QR code.




#### 6.4.4 Karratha FeNaCING Festival – 5 and 6 August

- On 5 and 6 August 2023, Woodside had a stand at the annual FeNaCING Festival in Karratha.
- Members of Woodside’s Corporate Affairs and Operations teams actively engaged with the community to discuss proposed EP activities.
- The stand included Consultation Information Sheets for a number of EPs including this EP.
- An EP consultation banner with QR code (linked to the Consultation Activities page on the Woodside website), a Scarborough Project banner, and Browse Project banners were displayed at Woodside’s stand.
- Approximately 2,000 people visited the Woodside stand (based on the number of completed consultation forms and questionnaires).
- All community members were encouraged to provide their views on Woodside activities through the Woodside feedback form on the Woodside website, or to subscribe to Woodside updates. An iPad was available for stakeholders to do this on the spot.
- This consultation opportunity was promoted in the Pilbara News on 2 August 2023, and a story appeared on the Woodside North West Facebook page on 2 August 2023.
- Community discussions centred on:
  - o Update of Woodside activities, and employment and contracting opportunities;
  - o General Scarborough project update and operations. A Scarborough operations map and Floating Production Unit images were available. There was general community interest and support for the project. Discussions included:
    - Location of the fields, distance from shore and water depth
    - Length of the pipeline
    - Interest that the Field Production Unit would not be fixed to the seafloor and its size
    - Progress and development of Pluto Train 2, and role of Pluto Train 1
    - Scarborough commencement and field life;



## Story on the Woodside North West Facebook Page – 2 August 2023



**PROVIDE YOUR FEEDBACK  
AT FeNaCING FESTIVAL**

Are you interested in what Woodside has planned on land and sea?

Join our friendly team at FeNaCING Festival and find out more about our Environment Plans and projects, including Scarborough and Browse.

We look forward to sharing information about our current and proposed activities and providing the opportunity to discuss your relevant functions, activities or interests and receive your input.



## Environment Plan Banner





**Pilbara News Advertisement – 2 August 2023**



**PROVIDE YOUR FEEDBACK AT FeNaCING FESTIVAL**

Are you interested in what Woodside has planned on land and sea?

Join our friendly team at FeNaCING Festival and find out more about our Environment Plans and projects, including Scarborough and Growes.

We look forward to sharing information about our current and proposed activities and providing the opportunity to discuss your relevant functions, activities or interests and receive your input.

Follow us @woodsidenorthwest  
www.woodside.com



6 NEWS Pilbara NEWS  
Wednesday, August 2, 2023

**Melski's murals brought to life**

DANIEL SPENCE

Tambrey Primary School has successfully brought renowned artist Mel Melski, popularly known as Melski, and her sister Tash to create three vibrant murals around the school premises.

With funding support from corporate entities like Woodside, FMG, and Pilbara Real Estate, as well as community contributions from Jerome, Martin, Santos, Yara, and QUB Energy, the school raised more than \$20,000 to bring this art project to life.

Home to nearly 700 students, with a third of them being Indigenous backgrounds, school Deputy Principal Brett Whitbread and visual arts specialist Felicity Collins said the mission of the project was to celebrate diversity and create a sense of belonging by reflecting students' culture through artwork.

The school's mission was to create a profound sense of belonging by reflecting the students' culture through artwork.

What particularly attracted the school to Mel's art-



The artist was brought to the school to create murals.

work was its unique point-by-point style, which allowed students to actively participate in the mural creation process.

eager to engage the entire school community, the school declared a special "paint week," during which more than 400 students enthusiastically joined hands to contribute to the murals.

Throughout the week, students not only participated in the creation of the murals but also enjoyed immersive art sessions in the park, including painting, drawing, collaging, and chalk drawings under the enchanting winter weather. The entire experience

served to nurture the students' creativity and appreciation for art, leaving a lasting impact on their artistic aspirations.

Ms Collins said she was thrilled to see the whole school coming together for a week of collaborative art.

"We were delighted to see students immersed in a week of collaborative art," she said.

"Students not only contributed to the creation of the mural but also with their involvement in the immersive art in the park session — which included painting, drawing, collaging and chalk drawings — while all outside soaking up the winter weather."



**this is your chance to make a change**

Chevron's Community Spirit Fund is offering up to \$15,000 towards local projects.

Beyond supplying affordable, reliable, ever-cleaner energy — we believe we have an important role to play in helping local communities build a vibrant and prosperous future.

We do this by investing in programs which contribute to areas of health and wellbeing, education, environment and building thriving communities.

We're calling for applications for the Chevron Community Spirit Fund, offering donations of up to \$15,000 to not-for-profit organisations operating in the following Northwest locations:

- Carnarvon
- Coral Bay
- Dampier
- Denham
- Exmouth
- Karratha
- Onslow
- Port Hedland
- Roebourne
- Shark Bay

Applications are open now until 13 August 2023. To apply, head to [australia.chevron.com](http://australia.chevron.com)



CHEVRON, the CHEVRON DESIGN and LOGO, and 1080MAN ENERGY are registered trademarks of Chevron International Technology LLC. ©2023 Chevron Technology Pty Ltd. All rights reserved.

#### 6.4.5 Passion of the Pilbara Festival – Onslow – 17 August 2023

- Woodside had a stand at the Passion of the Pilbara festival in Onslow.
- Members of Woodside’s Corporate Affairs team actively engaged with the community to discuss proposed EP activities.
- The stand included Consultation Information Sheets for a number of EPs including this EP.
- Approximately 100 people visited the Woodside stand.
- Community members were encouraged to provide their views on Woodside’s activities through the Woodside feedback form on the Woodside website, or to subscribe to Woodside updates.
- This consultation opportunity was promoted in a story on the Woodside North West Facebook page on 17 August 2023.
- Community discussions centred on:
  - a. Update of Woodside activities and employment opportunities.
  - b.
  - c. General Scarborough project update and operations. A Scarborough operations map and Floating Production Unit images were available. There was general community interest and support for the project. Discussions included:
    - Support for the project and dissatisfaction about protester activity against the project
    - Number of jobs during construction
    - Location of activities (noting activity was not off the coast of Onslow).
- One individual asked in relation to the Scarborough Project what Woodside was doing to protect the environment.


### Passion of the Pilbara Facebook Post –17 August 2023

**Passion of the Pilbara**  
5d · 🌐

Passion of the Pilbara wouldn't be possible without the help of supporters like Woodside. Do you want the chance to win some amazing prizes, in 2023 we are bringing back the POP Passport, giving you the chance to win an iPad and more!


Visit the Woodside team at their community stall on Saturday to learn about their activities. Make sure you bring along your POP Passport so the Woodside team can stamp it.

Passion of the Pilbara is brought to you by the Shire of Ashburton with the support of our sponsors.



The poster features a circular graphic with the text 'Onslow Passion of the Pilbara 18-19 August 2023'. The circle is decorated with icons for 'fun', 'magic', 'art', 'events', and 'entertainment'. To the right is the 'shire of Ashburton opportunity to community' logo.

**THANK YOU TO OUR SPONSOR:**



The Woodside Energy logo consists of a stylized leaf icon and the text 'Woodside Energy'.

### Woodside North West Facebook Page –17 August 2023

**Woodside North West**  
August 17 at 6:32 PM · 🌐

👉 We can't wait to join in the fun at this year's Passion of the Pilbara 🎉

Make sure you stop by this Saturday to collect your POP Passport stamp for your chance to win some awesome prizes!



The poster features a circular graphic with the text 'Onslow Passion of the Pilbara 18-19 August 2023'. The circle is decorated with icons for 'fun', 'magic', 'art', 'events', and 'entertainment'. To the right is the 'shire of Ashburton opportunity to community' logo.

**THANK YOU TO OUR SPONSOR:**

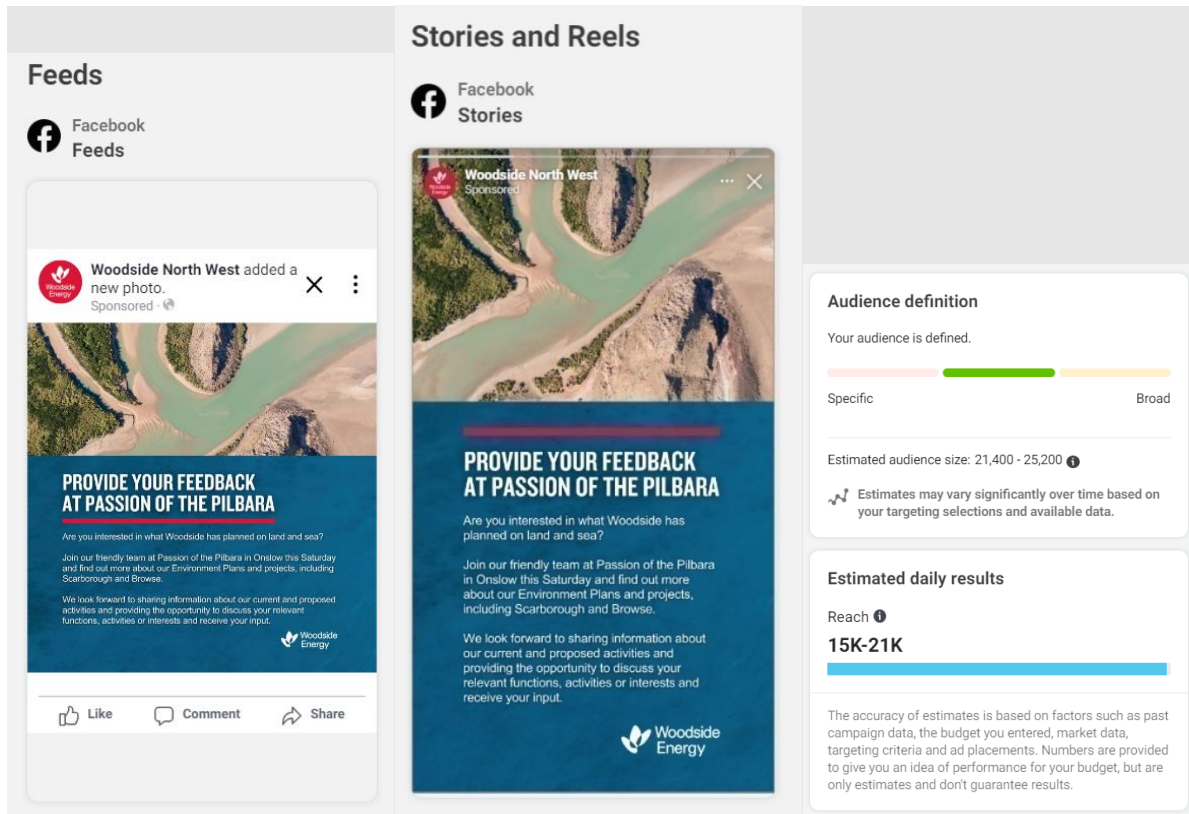


The Woodside Energy logo consists of a stylized leaf icon and the text 'Woodside Energy'.

**Passion of the Pilbara**  
August 17 at 11:00 AM · 🌐

Passion of the Pilbara wouldn't be possible without the help of supporters like Woodside. Do you want the chance to win some amazing prizes, in 2023 we are bri... See more

**Woodside Facebook Post and Story – 17 August 2023**



**Feeds**

Facebook Feeds

Woodside North West added a new photo. Sponsored

**PROVIDE YOUR FEEDBACK AT PASSION OF THE PILBARA**

Are you interested in what Woodside has planned on land and sea? Join our friendly team at Passion of the Pilbara in Onslow this Saturday and find out more about our Environment Plans and projects, including Scarborough and Browse.

We look forward to sharing information about our current and proposed activities and providing the opportunity to discuss your relevant functions, activities or interests and receive your input.

Like Comment Share

**Stories and Reels**

Facebook Stories

Woodside North West Sponsored

**PROVIDE YOUR FEEDBACK AT PASSION OF THE PILBARA**

Are you interested in what Woodside has planned on land and sea? Join our friendly team at Passion of the Pilbara in Onslow this Saturday and find out more about our Environment Plans and projects, including Scarborough and Browse.

We look forward to sharing information about our current and proposed activities and providing the opportunity to discuss your relevant functions, activities or interests and receive your input.

**Audience definition**

Your audience is defined.

Specific  Broad

Estimated audience size: 21,400 - 25,200

Estimates may vary significantly over time based on your targeting selections and available data.

**Estimated daily results**

Reach

**15K-21K**

The accuracy of estimates is based on factors such as past campaign data, the budget you entered, market data, targeting criteria and ad placements. Numbers are provided to give you an idea of performance for your budget, but are only estimates and don't guarantee results.

**Woodside Marquee**





## Woodside Information Sheets



#### 6.4.6 Community information sessions – Karratha, Port Hedland and Roebourne – 18, 19 and 20 September respectively

- During 18–20 September 2023, Woodside consulted the Karratha, Port Hedland and Roebourne communities on EP activities.
- Members of Woodside’s Corporate Affairs, First Nations, Environment and Scarborough Project teams actively engaged the community to discuss proposed EPs, including the Scarborough and Browse projects.

##### 18 September 2023

- Karratha Shopping Centre 8am–12pm
- Red Earth Arts Precinct 3–6pm
- Estimated number of people consulted: 20

##### 19 September 2023

- Port Hedland, South Hedland Square 10am–5pm
- Estimated number of people consulted: 2

##### 20 September 2023

- Roebourne, Woodside Office 10am–4pm
  - Estimated number of people consulted: no attendance at the session due to Sorry Business and multiple Aboriginal corporation meetings which were unknown at the time of scheduling/planning engagements.
- These consultation opportunities were promoted in the Pilbara News on 13 September 2023, and via Facebook and Instagram social media campaigns from 6 to 16 September 2023.
  - An EP consultation banner with a QR code linking to the Consultation Activities page on the Woodside website, a Scarborough Project banner, and Browse Project banners were displayed at Woodside’s stand.
  - Consultation on all Scarborough EPs occurred. Consultation Information Sheets on all activities were available including this EP, and Woodside’s seismic 101 video was shown on an iPad to those interested in that activity. A Scarborough Project map was shown and discussed.
  - All community members were encouraged to provide their views on Woodside’s activities through the feedback form on the Woodside website or to subscribe to Woodside updates. An iPad was available for stakeholders to do this on the spot.
  - Community discussions specific to the Scarborough Project centred on:
    - Opportunities for employment and business
    - Planned Scarborough seismic activities
    - A general Scarborough project update and operations. A Scarborough operations map and Floating Production Unit images were available. There was general community interest in the project. Discussions included:
      - General location (offshore and onshore);
      - Progress and development of Pluto Train 2, and role of Pluto Train 1
      - Project commencement
      - Final customers of the gas, described LNG and also the domestic gas supply to Western Australia
      - One individual in Karratha queried the impacts of seismic to the environment. Woodside’s discuss impacts and mitigations

- Two individuals subscribed to the Woodside website to receive consultation information
- Kariyarra Aboriginal Corporation discussed business opportunities
- Nyamal Aboriginal Corporation discussed training and job opportunities
- Opportunities for engagement with Prescribed Body Corporate's (PBC's).

**Pilbara News Advertisement – 13 September 2023**



City of Karratha Mayor Peter Long. Picture: Tom Zuurmaier

## Mayor runs again as candidates put forward pitches

**DANIEL SPENCE**

Nominations have closed for the 2023 Karratha mayoral and councillor elections, with the list of candidates running to be the city's next mayor being released.

Peter Long — who has been in the position since 2011 — will be running again and said, if re-elected, he would continue to provide Karratha with intelligent, safe and inclusive leadership.

"I am a full-time mayor, always able to receive your and your ideas," he said. "I love the Pilbara and our community."

Regional Development Australia Pilbara chief executive and former local government minister Tony Simpson is also running for mayor.

His vision is to join forces with State and Federal entities to progress childcare, health and housing solutions.

"I would work to draw major brand investments in retail and leisure to provide more options for residents. Identify land for a foreshore entertainment hub and infuse Karratha with festivals and quality entertainment," he said.

Brenton Johannsen — who ran for the seat of Durack at the recent Federal election under One Nation — said he would donate the entire mayoral allowance to charity.

"I will be a committed full-time mayor, my goal is to visit all businesses and resident groups on a regular basis to touch base and discuss any new issues," he said.

Mr Johannsen said his aims would be neighbourhood safety, more opportunities for locals, ratepayer discounts for local facilities, moving airport smokers' areas, and eco-friendly weed management.

As a sitting councillor, radio announcer, parent and former local business owner mayoral candidate Pablo Miller said he had got to know the people of Karratha.

"As your mayor, I will continue to not only listen but be a strong advocate for our community," he said.

Mr Johannsen said he was interested in expanding opportunities for young people and families, growing local and cultural tourism, supporting businesses and bolstering mental health services.

The owner of the North West Brewing Co Daniel Scott has a vision as mayor to grow Karratha's economy.

His plan is to create an education and sporting precinct between the TAFE and St Luke's College, with accommodation for secondary and tertiary students.

His plans also include a new home for the Pilbara Universities Centre, and a sporting hub for rugby, soccer, hockey and gymnastics.

Those running for council include Daniel Scott, Kieran Durr, Wayne Mothershaw, Mr Johannsen, Sarah Roots, George Levisianos, Bradley Dawby, Mr Simpson, James Corvo, Joseph Almonte and Geoff Harris.

Elections will be held for the four vacancies on October 21st.

FIND OUT MORE ABOUT OUR PROPOSED ACTIVITIES

### ARE YOU INTERESTED IN WHAT WOODSIDE HAS PLANNED ON LAND AND SEA?

We'd like to talk to relevant persons about our Environment Plans. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.

Speak to our friendly team members at one of our four sessions in September.

<p><b>Monday, 18 September 2023</b> Between 9.00am - 12.00pm Karratha Shopping Centre Sharpe Avenue Karratha</p>	<p><b>Monday, 18 September 2023</b> Between 3.00pm - 6.00pm Red Earth Arts Precinct 27 Welcome Road Karratha</p>
<p><b>Tuesday, 19 September 2023</b> Between 10.00am - 5.00pm South Hedland Square 9-31 Throssell Road South Hedland</p>	<p><b>Wednesday, 20 September 2023</b> Between 10.00am - 4.00pm Woodside Office 39 Roe Street Roebourne</p>

You can access our consultation information, provide feedback and subscribe for updates by scanning the QR code.

ONSLOW

# Business Excellence Awards

## Cocktail Celebration

Saturday 16th September, 2023  
at Onslow Beach Resort

A fabulous stand up cocktail event with canapés and drinks from 5:30pm  
Award presentations from 7pm  
Live entertainment  
post award presentations

**Tickets**  
Purchase your tickets online:  
<https://OCCIBusinessAwards2023.eventbrite.com.au>

**Social Media – 6 to 16 September 2023**

<p><b>Are you interested in what Woodside has planned on land and sea?</b></p> <p>Stop by and say hello to our friendly team in Karratha.</p> <p>We'd like to talk to relevant persons about our Environment Plans. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.</p> <p><b>Monday, 18 September 2023</b></p> <p>Between 8.00am - 12.00pm Karratha Shopping Centre Sharpe Avenue Karratha</p> <p>Between 3.00pm - 6.00pm Red Earth Arts Precinct 27 Welcome Road Karratha</p> 	<p><b>Are you interested in what Woodside has planned on land and sea?</b></p> <p>Stop by and say hello to our friendly team in Port Hedland.</p> <p>We'd like to talk to relevant persons about our Environment Plans. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.</p> <p><b>Tuesday, 19 September 2023</b></p> <p>Between 10.00am - 5.00pm South Hedland Square 9-31 Throssell Road South Hedland</p> 	<p><b>Are you interested in what Woodside has planned on land and sea?</b></p> <p>Stop by and say hello to our friendly team in Roebourne.</p> <p>We'd like to talk to relevant persons about our Environment Plans. We welcome your input and wish to provide you with the opportunity to share information and discuss your functions, activities or interests which may be affected by our proposed projects.</p> <p><b>Wednesday, 20 September 2023</b></p> <p>Between 10.00am - 4.00pm Woodside Office, Roebourne 39 Roe Street Roebourne</p> 
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**Social media reach:**

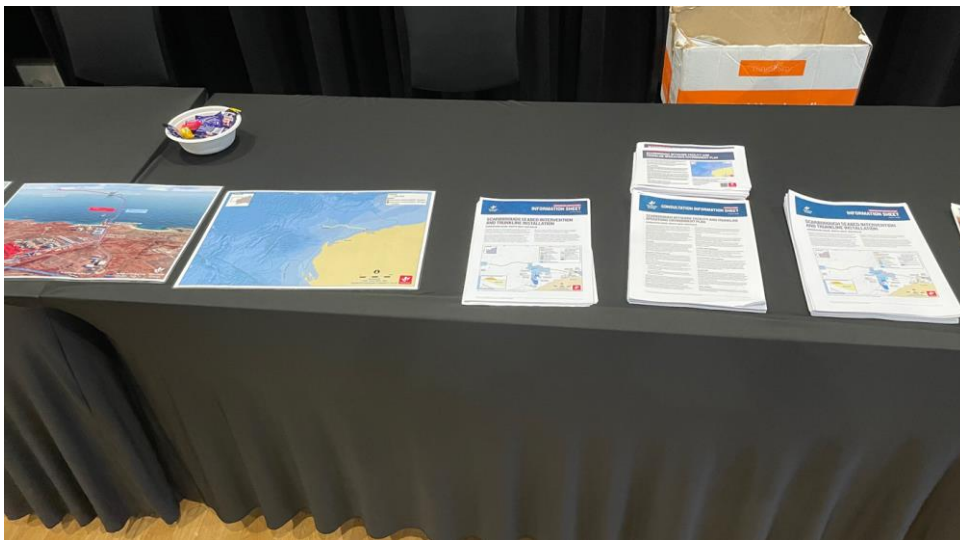
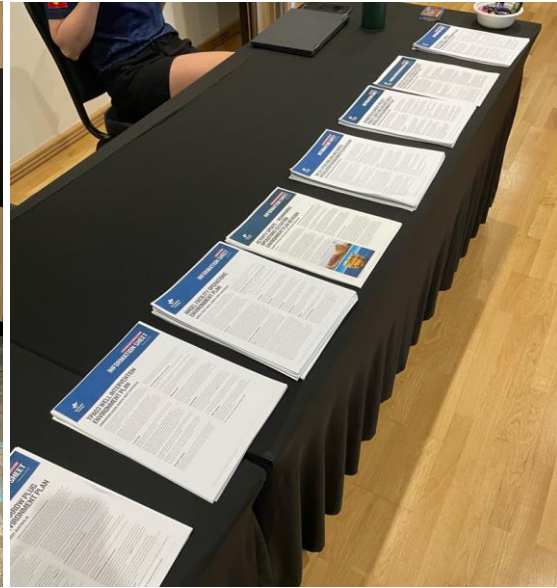
Location	Reach
Karratha	22,095
Port Hedland	26, 487
Roebourne	22,134



**Karratha Shopping Centre, Karratha – 18 September 2023**

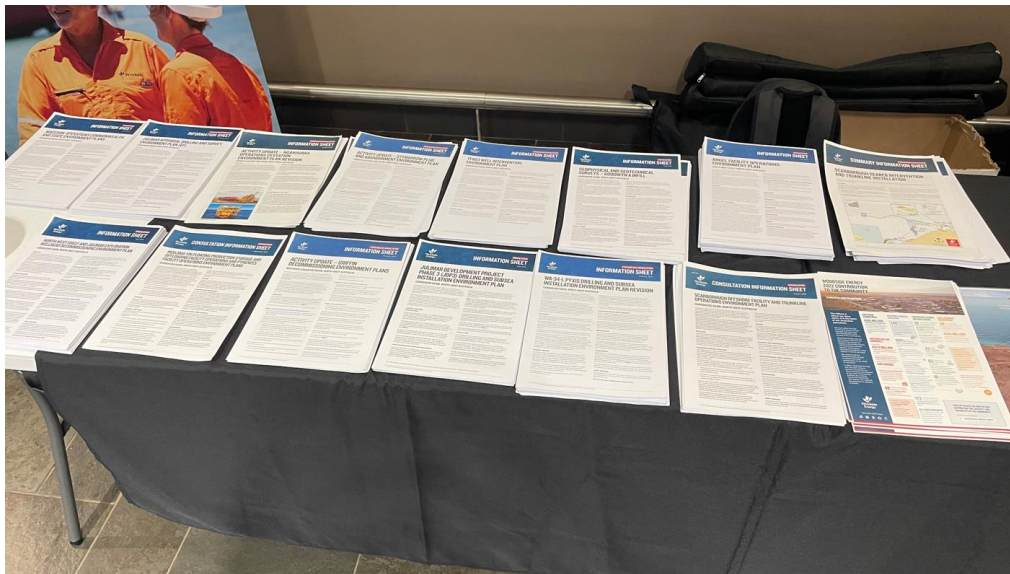


Red Earth Arts Precinct, Karratha – 18 September 2023





South Hedland Square, Port Hedland – 19 September 2023



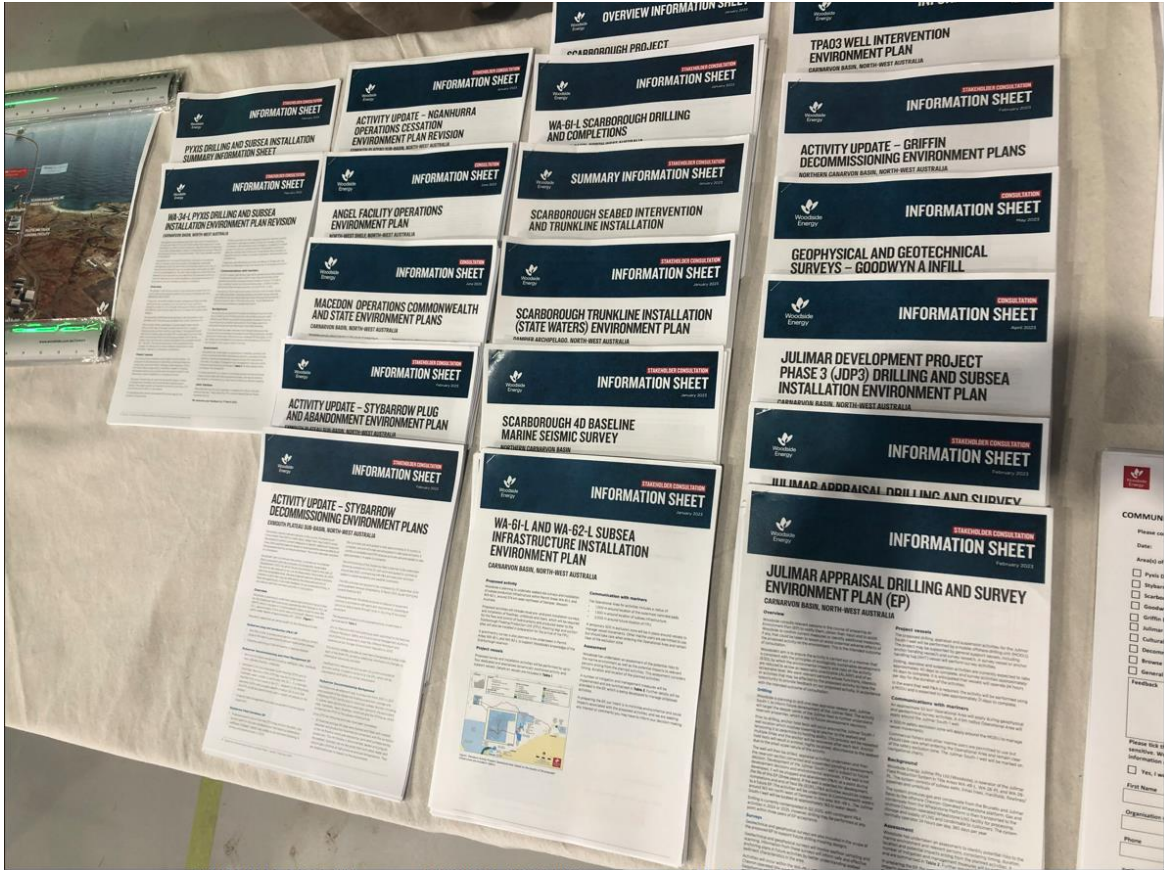
Woodside Office, Roebourne – 20 September 2023





## 6.5 Gascoyne region community activities

### 6.5.1 Community information session – Exmouth – 17 June 2023





- Woodside supported the PHI Helicopters community open day at the Exmouth Aerodrome on Saturday 17 June (10am – 1pm).
- Members of Woodside's Corporate Affairs, Environment and Scarborough Project teams actively engaged the community to discuss proposed EPs.
- Approximately 300 community people attended the event (adults and children).
- The majority of people wanted to understand Woodside's connection with PHI. There were also queries on contracting and job opportunities, including specifically for Scarborough activities.
- General questions from approximately five community members included:
  - Whales - what Woodside is doing to protect whales, what the impact to whales might be
  - The Scarborough FPU and nature of this i.e. is it DP or moored to the seabed, was it like an FPSO
  - General interest questions on Scarborough project - location, activities (i.e. trunkline installation, construction work at Pluto gas plant (within existing footprint), trunkline size and routing and why the location was chosen, field life and start up timing
  - Turtle nesting and lighting controls
  - Funding for whale shark research
- Many of the Consultation Information Sheets available were taken by attendees. Two attendees said they were taking the information sheets so they could see pipeline routes (for fishing opportunities), specifically mentioning permit numbers they were after.

## Exmouth Community Information Session – Geotargeted social media campaign – June 2023

A Facebook information campaign was targeted in Exmouth to ensure it reached communities where the Consultation Information Session was planned to be held. Geotargeting points were also included for spaces between towns, cities and shires to ensure no areas were missed – you’ll see below there are latitude and longitude references for those locations.

**Dates:** 15 June 2023 – 17 June 2023

**Platform:** Facebook

**Ad type/placement:** Feed tile and story

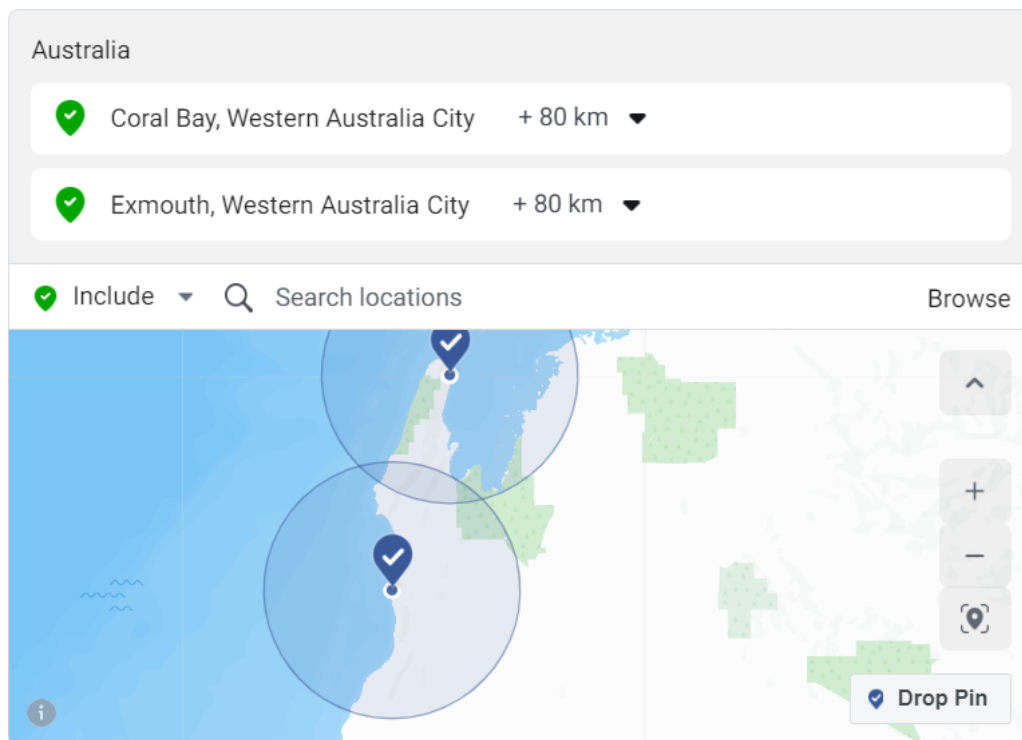
**Reach:** 6,801

**Impressions:** 8,237

**Geotargeting (see below)**

- 80km radius around Exmouth
- 80km radius around Coral Bay

Reach people living in or recently in this location. ⓘ



## 6.6 Presentation to Karratha Community Liaison Group – 29 June 2023

**ENVIRONMENT PLAN CONSULTATION**

- Changes to Commonwealth Environment Plan (EP) consultation requirements.
- Woodside is now consulting based on the **environment that may be affected (EMBA)** by a proposed petroleum activity rather than within the Operational Area.
- The EMBA is the largest spatial extent where unplanned events, no matter how unlikely, could potentially have an environmental consequence.
- Any person or organisation who does not wish to continue to receive EP consultation materials where they have only been assessed as 'relevant' for unplanned events in the EMBA, under the EP consultation requirements, please advise us in writing and we will not send further information.
- However, you should be aware that this request will need to be recorded in our EP documents and will be publicly available.
- We will be holding a drop-in session after this meeting for anyone in community who would like to know more about any of our EPs.




29 | Karratha Community Liaison Group | June 2023

**ENVIRONMENT PLAN CONSULTATION**  
**Consultation with Karratha CLG**

Previously consulted	Nganhurra RTM Decommissioning	Lookahead for 2023 <sup>1,2</sup>
	Griffin Field Decommissioning	
	Stybarrow Field Decommissioning	
	Scarborough Activities	
	Pluto Well (WA-34-L)	
	Julimar Appraisal Well	
	TPA03 Well Intervention	
	JDP3	
	NWS Geotech/Geophysics Survey	
	Angel Operations	
	Macedon Commonwealth and State Operations	
	NWS / Julimar wellhead decommissioning	
	Browse State wellhead decommissioning	
	Ngajima-Yin Floating Production Storage and Offloading Facility Operations	
	Pyrenees Facility Operations	
	Scarborough Operations	
	Scarborough State Trunklines	
	NRC Operations	
	Vincent Phase V Drilling	
	Macedon Infill Drilling	

<sup>1</sup> Subject to planning and scheduling.  
<sup>2</sup> Woodside will assess the relevance of Karratha CLG during the development of each environment plan.

30 | Karratha Community Liaison Group | June 2023



## **APPENDIX G DEPARTMENT OF ABORIGINAL AFFAIRS HERITAGE SEARCH RESULTS**

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Controlled Ref No: SA0006AH0000004

Revision: 6

Page 576 of 582

Uncontrolled when printed. Refer to electronic version for most up to date information.

## List of Other Heritage Places

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### Search Criteria

40 Other Heritage Places in Shapefile - EMBA\_20210901. 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](mailto:AboriginalHeritage@dplh.wa.gov.au) and we will make every effort to rectify it as soon as possible.

### Copyright

Copyright in the information contained herein is and shall remain the property of the State of Western Australia. All rights reserved.

### Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

### Terminology (NB that some terminology has varied over the life of the legislation)

**Place ID/Site ID:** This a unique ID assigned by the Department of Planning, Lands and Heritage to the place.

#### Status:

- **Registered Site:** The place has been assessed as meeting Section 5 of the *Aboriginal Heritage Act 1972*.
- **Other Heritage Place which includes:**
  - **Stored Data / Not a Site:** The place has been assessed as not meeting Section 5 of the *Aboriginal Heritage Act 1972*.
  - **Lodged:** Information has been received in relation to the place, but an assessment has not been completed at this *stage* to determine if it meets Section 5 of the *Aboriginal Heritage Act 1972*.

#### Access and Restrictions:

- **File Restricted = No:** Availability of information that the Department of Planning, Lands and Heritage holds in relation to the place is not restricted in any way.
- **File Restricted = Yes:** Some of the information that the Department of Planning, Lands and Heritage holds in relation to the place is restricted if it is considered culturally sensitive. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the informants who provided the information. To request access please contact [AboriginalHeritage@dplh.wa.gov.au](mailto:AboriginalHeritage@dplh.wa.gov.au).
- **Boundary Restricted = No:** Place location is shown as accurately as the information lodged with the Registrar allows.
- **Boundary Restricted = Yes:** To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km<sup>2</sup>) provides a general indication of where the place is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- **Restrictions:**
  - **No Restrictions:** *Anyone* can view the information.
  - **Male Access Only:** Only *males* can view restricted information.
  - **Female Access Only:** Only *females* can view restricted information.

**Legacy ID:** This is the former unique number that the former Department of Aboriginal Sites assigned to the place. This has been replaced by the Place ID / Site ID.

## List of Other Heritage Places

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# Aboriginal Heritage Inquiry System

## List of Other Heritage Places

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
883	BARROW ISLAND 01	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	334950mE 7692667mN Zone 50 [Reliable]	P07291
884	BARROW ISLAND 02	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	331673mE 7691987mN Zone 50 [Reliable]	P07292
885	BARROW ISLAND 03	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	326224mE 7689495mN Zone 50 [Reliable]	P07293
886	BARROW ISLAND 04	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	325227mE 7694610mN Zone 50 [Reliable]	P07294
887	BARROW ISLAND 05	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	337603mE 7713680mN Zone 50 [Reliable]	P07295
888	BARROW ISLAND 06 A-F	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	337202mE 7710824mN Zone 50 [Unreliable]	P07296
889	BARROW ISLAND 07	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	337957mE 7709368mN Zone 50 [Reliable]	P07297
890	BARROW ISLAND 08	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	326487mE 7695727mN Zone 50 [Reliable]	P07298
891	BARROW ISLAND 09	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	326270mE 7691185mN Zone 50 [Reliable]	P07299
892	BARROW ISLAND 10	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	331892mE 7691082mN Zone 50 [Reliable]	P07300
893	BARROW ISLAND 11	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	326145mE 7695108mN Zone 50 [Reliable]	P07301
894	BARROW ISLAND 12	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	326347mE 7699332mN Zone 50 [Reliable]	P07302

## Aboriginal Heritage Inquiry System

### List of Other Heritage Places

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
6783	28 MILE CREEK NORTH 2	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	795452mE 7546377mN Zone 49 [Reliable]	P06141
6786	LAKESIDE COASTAL PLAIN	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	801642mE 7560649mN Zone 49 [Unreliable]	P06144
6789	TURQUOISE BAY NORTH	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	798642mE 7554649mN Zone 49 [Unreliable]	P06147
7208	MILYERING ROCKS.	No	No	No Gender Restrictions	Lodged	Hunting Place	*Registered Knowledge Holder names available from DAA	800842mE 7560649mN Zone 49 [Reliable]	P05712
8951	BARROW ISLAND	No	No	No Gender Restrictions	Stored Data / Not a Site	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	335137mE 7705156mN Zone 50 [Unreliable]	P03542
11801	COASTAL MIDDEN, 5 MILE	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	195638mE 7582655mN Zone 50 [Unreliable]	P00345
20621	Bedout Island	No	No	No Gender Restrictions	Lodged	Mythological, Natural Feature, Other: Island	*Registered Knowledge Holder names available from DAA	720197mE 7832653mN Zone 50 [Reliable]	
22943	Flacourt Bay 01	No	No	No Gender Restrictions	Lodged	Rockshelter	*Registered Knowledge Holder names available from DAA	331540mE 7705613mN Zone 50 [Reliable]	
29549	Boodie Soak	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	333058mE 7702494mN Zone 50 [Reliable]	
31762	Site 1	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	332664mE 7694168mN Zone 50 [Reliable]	
31763	Site 2	No	No	No Gender Restrictions	Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	332528mE 7694213mN Zone 50 [Reliable]	
36199	Boodie Cave	No	No		Lodged	Artefacts / Scatter, Rockshelter	*Registered Knowledge Holder names available from DAA	329709mE 7703887mN Zone 50 [Reliable]	



# Aboriginal Heritage Inquiry System

## List of Other Heritage Places

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
36234	South End structures, Barrow Island.	No	No		Lodged	Historical, Man-Made Structure	*Registered Knowledge Holder names available from DAA	326057mE 7689365mN Zone 50 [Unreliable]	
36261	G-13-S0001	No	No		Lodged	Quarry	*Registered Knowledge Holder names available from DAA	329032mE 7702259mN Zone 50 [Reliable]	
36262	H-24-S0001	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	330962mE 7691480mN Zone 50 [Reliable]	
36263	H-24-S0002	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	330959mE 7691251mN Zone 50 [Reliable]	
36264	I-23-S0001	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	331260mE 7692010mN Zone 50 [Reliable]	
36265	I-23-S0002	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	331643mE 7692090mN Zone 50 [Reliable]	
36266	I-24-S0003	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	331552mE 7691950mN Zone 50 [Reliable]	
36267	J-23-S0001	No	No		Lodged	Grinding Patches / Grooves	*Registered Knowledge Holder names available from DAA	332215mE 7692570mN Zone 50 [Reliable]	
36268	J-23-S0002	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	332208mE 7692431mN Zone 50 [Reliable]	
36269	J-23-S0003	No	No		Lodged	Modified Tree	*Registered Knowledge Holder names available from DAA	332193mE 7692286mN Zone 50 [Reliable]	
36270	M-03-S0001	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	335996mE 7712066mN Zone 50 [Reliable]	
36271	N-02-S0001	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	336855mE 7713004mN Zone 50 [Reliable]	



## Aboriginal Heritage Inquiry System

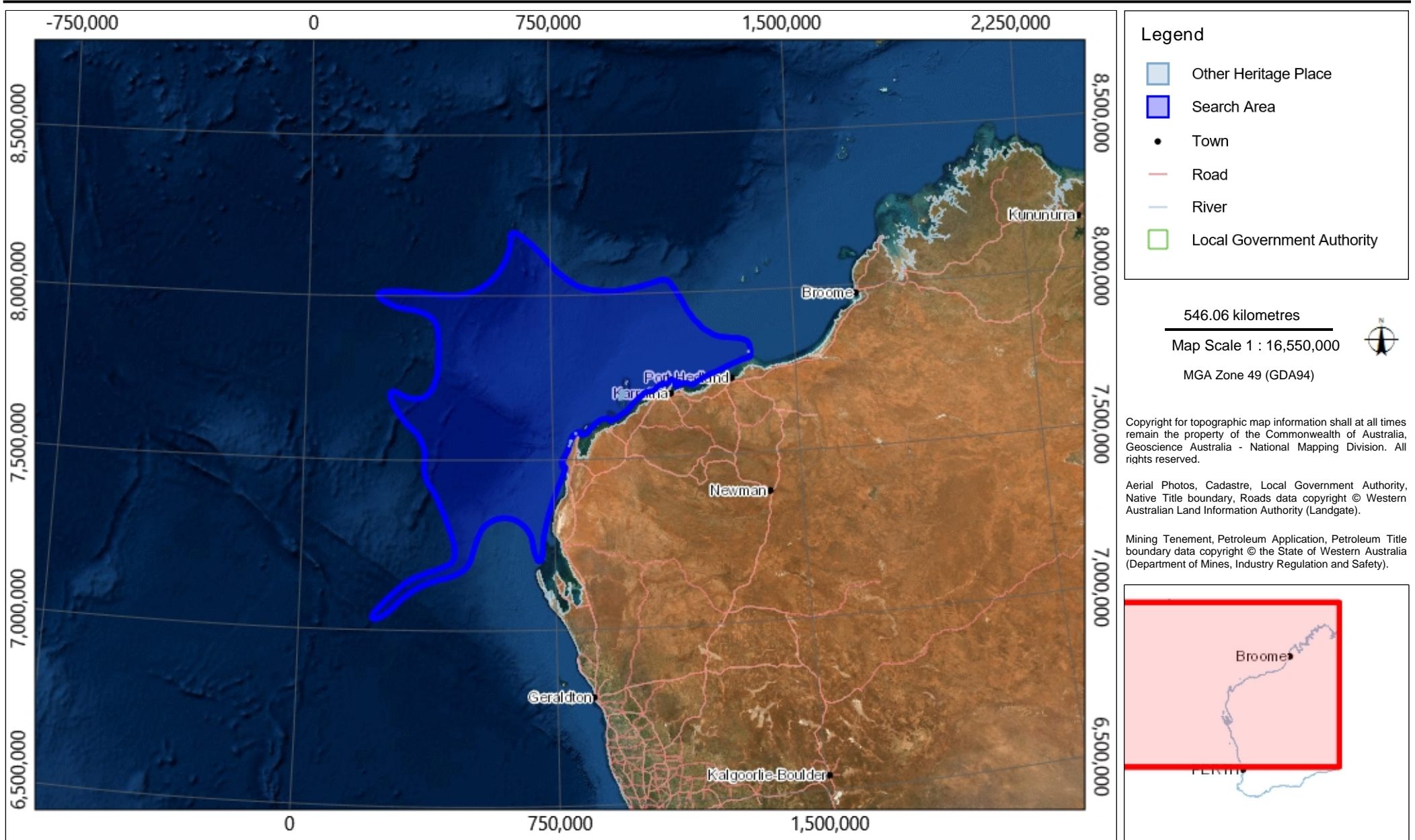
### List of Other Heritage Places

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
36272	O-02-S0002	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	337100mE 7713272mN Zone 50 [Reliable]	
36273	O-05-S0003	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	337727mE 7710822mN Zone 50 [Reliable]	
36348	P-04-S0001	No	No		Lodged	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	338193mE 7711023mN Zone 50 [Reliable]	
38763	Wapet Shell Midden	No	No		Stored Data / Not a Site	Shell	*Registered Knowledge Holder names available from DAA	340812mE 7707336mN Zone 50 [Reliable]	



# Aboriginal Heritage Inquiry System

## Map of Other Heritage Places





## List of Registered Aboriginal Sites

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### Search Criteria

54 Registered Aboriginal Sites in Shapefile - EMBA\_20210901. Warning: Search area complex so results may be inaccurate. Contact DPLH for assistance.

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  - No Restrictions: Anyone can view the information.
  - Male Access Only: Only males can view restricted information.
  - Female Access Only: Only females can view restricted information.

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## List of Registered Aboriginal Sites

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Satellite, Hybrid, Road basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, HERE, DeLorme, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community.

Topographic basemap sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community.



# Aboriginal Heritage Inquiry System

## List of Registered Aboriginal Sites

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
563	POINT MURAT 01	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	208716mE 7585665mN Zone 50 [Reliable]	P07501
564	POINT MURAT 02	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	209079mE 7585539mN Zone 50 [Reliable]	P07502
628	CAMP THIRTEEN BURIAL	No	No	No Gender Restrictions	Registered Site	Skeletal Material / Burial	*Registered Knowledge Holder names available from DAA	800392mE 7559449mN Zone 49 [Reliable]	P07434
873	MONTEBELLO IS: NOALA CAVE.	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter, Rockshelter, BP Dating: 27,220 +/- 640	*Registered Knowledge Holder names available from DAA	348188mE 7741053mN Zone 50 [Reliable]	P07287
926	MONTEBELLO IS: HAYNES CAVE.	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter, Rockshelter, Arch Deposit	*Registered Knowledge Holder names available from DAA	348289mE 7741005mN Zone 50 [Reliable]	P07286
966	ROSEMARY IS.11: CHOOKIE BAY	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	459339mE 7736355mN Zone 50 [Unreliable]	P07219
967	ROSEMARY IS.12: CHOOKIE BAY	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Quarry	*Registered Knowledge Holder names available from DAA	458839mE 7736655mN Zone 50 [Unreliable]	P07220
968	ROSEMARY IS.13	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Grinding Patches / Grooves, Midden / Scatter	*Registered Knowledge Holder names available from DAA	458839mE 7736955mN Zone 50 [Unreliable]	P07221
969	ROSEMARY IS.14	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Grinding Patches / Grooves, Midden / Scatter	*Registered Knowledge Holder names available from DAA	458939mE 7736855mN Zone 50 [Unreliable]	P07222
970	ROSEMARY IS.15: AIRSTRIP	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Grinding Patches / Grooves, Midden / Scatter	*Registered Knowledge Holder names available from DAA	458739mE 7737855mN Zone 50 [Unreliable]	P07223
971	ROSEMARY IS.16: AIRSTRIP	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter, Quarry	*Registered Knowledge Holder names available from DAA	458539mE 7737855mN Zone 50 [Unreliable]	P07224
972	ROSEMARY IS.17: AIRSTRIP	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Quarry	*Registered Knowledge Holder names available from DAA	458139mE 7737655mN Zone 50 [Unreliable]	P07225

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## List of Registered Aboriginal Sites

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
973	ROSEMARY IS.18: DEEP WATER	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	457039mE 7736655mN Zone 50 [Unreliable]	P07226
974	ROSEMARY IS.19: CHITON	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	456839mE 7736355mN Zone 50 [Unreliable]	P07227
978	ROSEMARY IS.23: WADJURU R/H	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Engraving, Grinding Patches / Grooves, Man-Made Structure, Midden / Scatter, Water Source	*Registered Knowledge Holder names available from DAA	455839mE 7734355mN Zone 50 [Unreliable]	P07231
6754	OSPREY BAY 6	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	792942mE 7538749mN Zone 49 [Reliable]	P06165
6755	OSPREY BAY INTERDUNAL 1	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	792342mE 7537149mN Zone 49 [Unreliable]	P06166
6757	BLOODWOOD CREEK MIDDEN 1	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	794942mE 7544549mN Zone 49 [Reliable]	P06168
6758	BLOODWOOD CREEK MIDDEN 2	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	794942mE 7545049mN Zone 49 [Reliable]	P06169
6759	BLOODWOOD CREEK MIDDEN 3	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	795142mE 7544949mN Zone 49 [Reliable]	P06170
6760	BLOODWOOD CREEK SHORELINE	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	794942mE 7545249mN Zone 49 [Reliable]	P06171
6761	LOW POINT MIDDEN	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	802992mE 7566299mN Zone 49 [Reliable]	P06172
6762	MILYERING MIDDEN	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	801342mE 7561449mN Zone 49 [Reliable]	P06173
6764	CAMP 17 SOUTH MIDDENS	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	799042mE 7555649mN Zone 49 [Unreliable]	P06175

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## List of Registered Aboriginal Sites

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
6765	CAMP 17 NORTH MIDDENS	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	799042mE 7555849mN Zone 49 [Unreliable]	P06176
6782	28 MILE CREEK NORTH 1	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	795242mE 7545949mN Zone 49 [Unreliable]	P06140
6784	MANDU MANDU CREEK SOUTH	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	796642mE 7548649mN Zone 49 [Unreliable]	P06142
6785	MANDU MANDU CREEK NORTH	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	796642mE 7548649mN Zone 49 [Unreliable]	P06143
6790	YARDIE CREEK SOUTH 1	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	788942mE 7527749mN Zone 49 [Reliable]	P06148
6799	YARDIE BEACH MIDDEN	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	789842mE 7529049mN Zone 49 [Reliable]	P06157
6800	OYSTER STACKS MIDDEN	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	797042mE 7549849mN Zone 49 [Reliable]	P06158
6801	NORTH T-BONE BAY	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	801666mE 7562059mN Zone 49 [Reliable]	P06159
6802	OSPREY BAY 1	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	792742mE 7538149mN Zone 49 [Reliable]	P06160
6803	OSPREY BAY 2	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	792742mE 7538049mN Zone 49 [Reliable]	P06161
6804	OSPREY BAY 3	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	792542mE 7537849mN Zone 49 [Reliable]	P06162
6805	OSPREY BAY 4	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	792342mE 7537049mN Zone 49 [Reliable]	P06163

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## List of Registered Aboriginal Sites

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
6806	OSPREY BAY 5	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	792742mE 7538149mN Zone 49 [Reliable]	P06164
7124	DORRE ISLAND	No	No	No Gender Restrictions	Registered Site	Skeletal Material / Burial	*Registered Knowledge Holder names available from DAA	711750mE 7220260mN Zone 49 [Unreliable]	P05790
7126	MESA CAMP	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	798442mE 7554749mN Zone 49 [Unreliable]	P05792
7206	WEALJUGOO MIDDEN.	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter, Camp, Hunting Place	*Registered Knowledge Holder names available from DAA	776584mE 7504740mN Zone 49 [Reliable]	P05710
7254	SANDY BAY NORTH	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	793442mE 7539949mN Zone 49 [Reliable]	P05652
7265	LAKE SIDE VIEW	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	800942mE 7560549mN Zone 49 [Reliable]	P05664
7299	YARDIE CREEK	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	789642mE 7528649mN Zone 49 [Unreliable]	P05645
7300	MANDU MANDU CK ROCKSHELTERS	Yes	Yes	No Gender Restrictions	Registered Site	Artefacts / Scatter	*Registered Knowledge Holder names available from DAA	Not available when location is restricted	P05646
7303	TULKI WELL MIDDEN	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	798642mE 7554249mN Zone 49 [Reliable]	P05649
7304	PILGRAMUNNA BAY MIDDEN	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter	*Registered Knowledge Holder names available from DAA	794642mE 7543349mN Zone 49 [Reliable]	P05650
7305	MANGROVE BAY.	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Midden / Scatter, Skeletal Material / Burial, Hunting Place	*Registered Knowledge Holder names available from DAA	804142mE 7568149mN Zone 49 [Reliable]	P05651
10381	VLAMING HEAD	Yes	Yes	No Gender Restrictions	Registered Site	Ceremonial, Mythological	*Registered Knowledge Holder names available from DAA	Not available when location is restricted	P01799

## Aboriginal Heritage Inquiry System

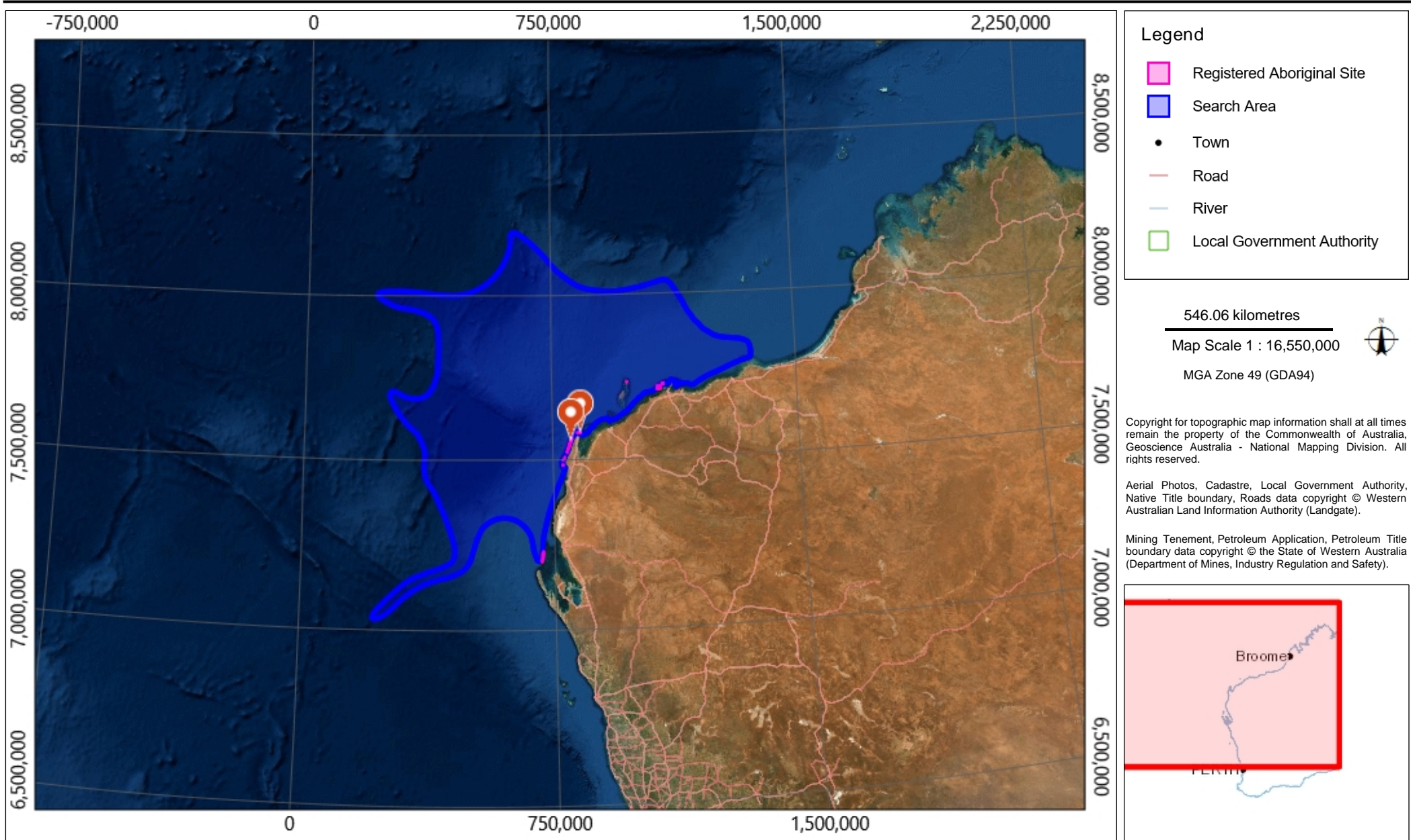
### List of Registered Aboriginal Sites

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
11328	GAP WELL	No	No	No Gender Restrictions	Registered Site	Engraving	*Registered Knowledge Holder names available from DAA	458639mE 7736755mN Zone 50 [Unreliable]	P00836
11458	NINGALOO (near)	No	No	No Gender Restrictions	Registered Site	Painting	*Registered Knowledge Holder names available from DAA	781642mE 7511649mN Zone 49 [Unreliable]	P00701
11775	ROSEMARY ISLAND 06	No	No	No Gender Restrictions	Registered Site	Engraving	*Registered Knowledge Holder names available from DAA	457839mE 7737256mN Zone 50 [Unreliable]	P00372
11789	ROSEMARY ISLAND 01	No	No	No Gender Restrictions	Registered Site	Artefacts / Scatter, Engraving, Midden / Scatter, Quarry	*Registered Knowledge Holder names available from DAA	458889mE 7737155mN Zone 50 [Unreliable]	P00386
11820	ENDERBY ISLAND 01	No	No	No Gender Restrictions	Registered Site	Engraving	*Registered Knowledge Holder names available from DAA	445137mE 7725156mN Zone 50 [Unreliable]	P00364
17193	Ningaloo Station	No	No	No Gender Restrictions	Registered Site	Skeletal Material / Burial	*Registered Knowledge Holder names available from DAA	775891mE 7489149mN Zone 49 [Unreliable]	



# Aboriginal Heritage Inquiry System

## Map of Registered Aboriginal Sites





### Search Criteria

No Other Heritage Places in Shapefile - Scarb\_SIPLE\_Ops\_Area

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# Aboriginal Heritage Inquiry System

## Map of Other Heritage Places

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# Aboriginal Heritage Inquiry System

## Map of Registered Aboriginal Sites



## APPENDIX H MASTER EXISTING ENVIRONMENT

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# **Description of the Existing Environment**



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## 1. INTRODUCTION

### 1.1 Purpose

This document applies, where indicated in the relevant Environment Plan, 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

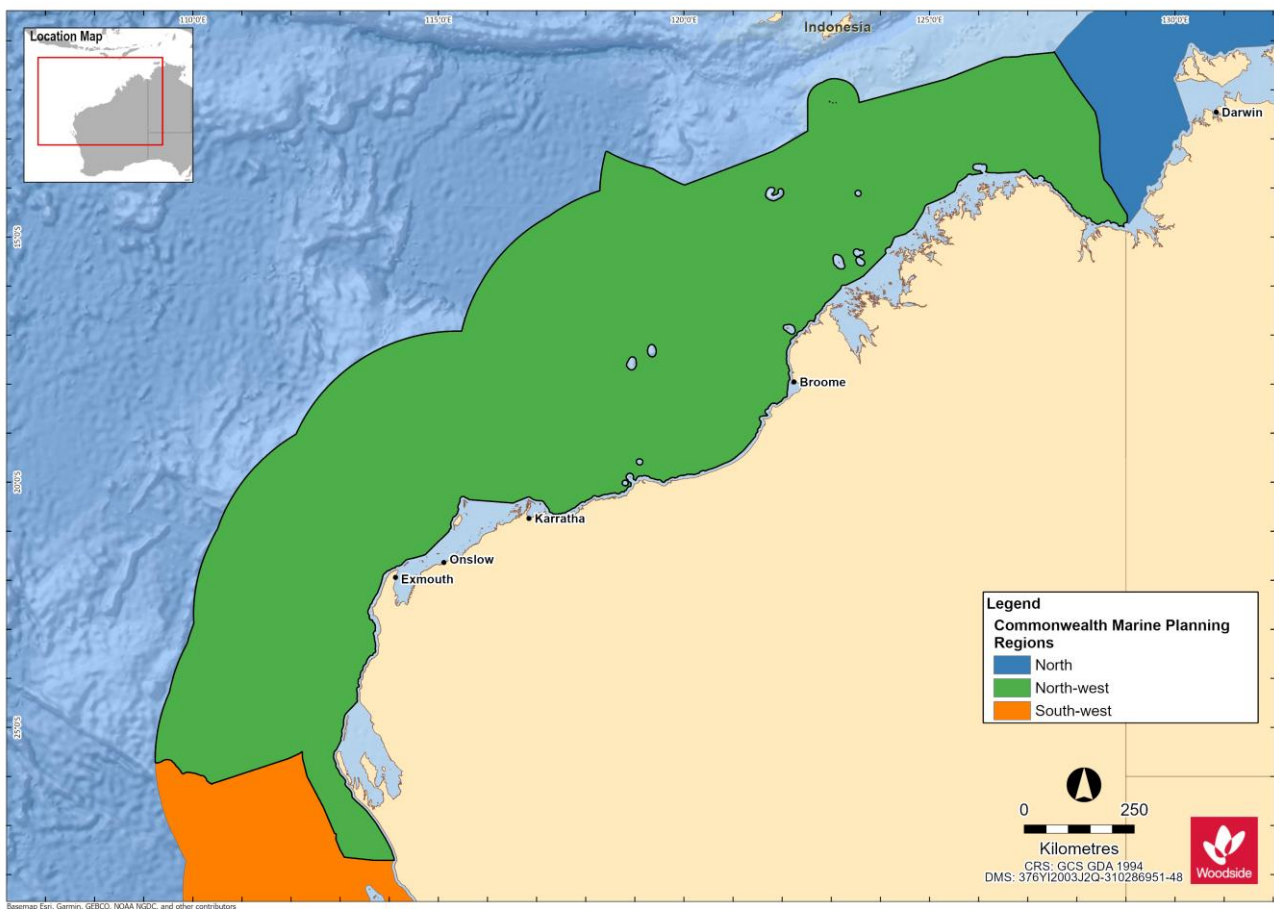
The information presented in this document is reviewed and updated, where relevant, on at least an annual basis to address any relevant changes, which includes but is not limited to the status of EPBC Act listed species, Part 13 Instruments, policies and guidelines and recently published scientific literature.

### 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**.

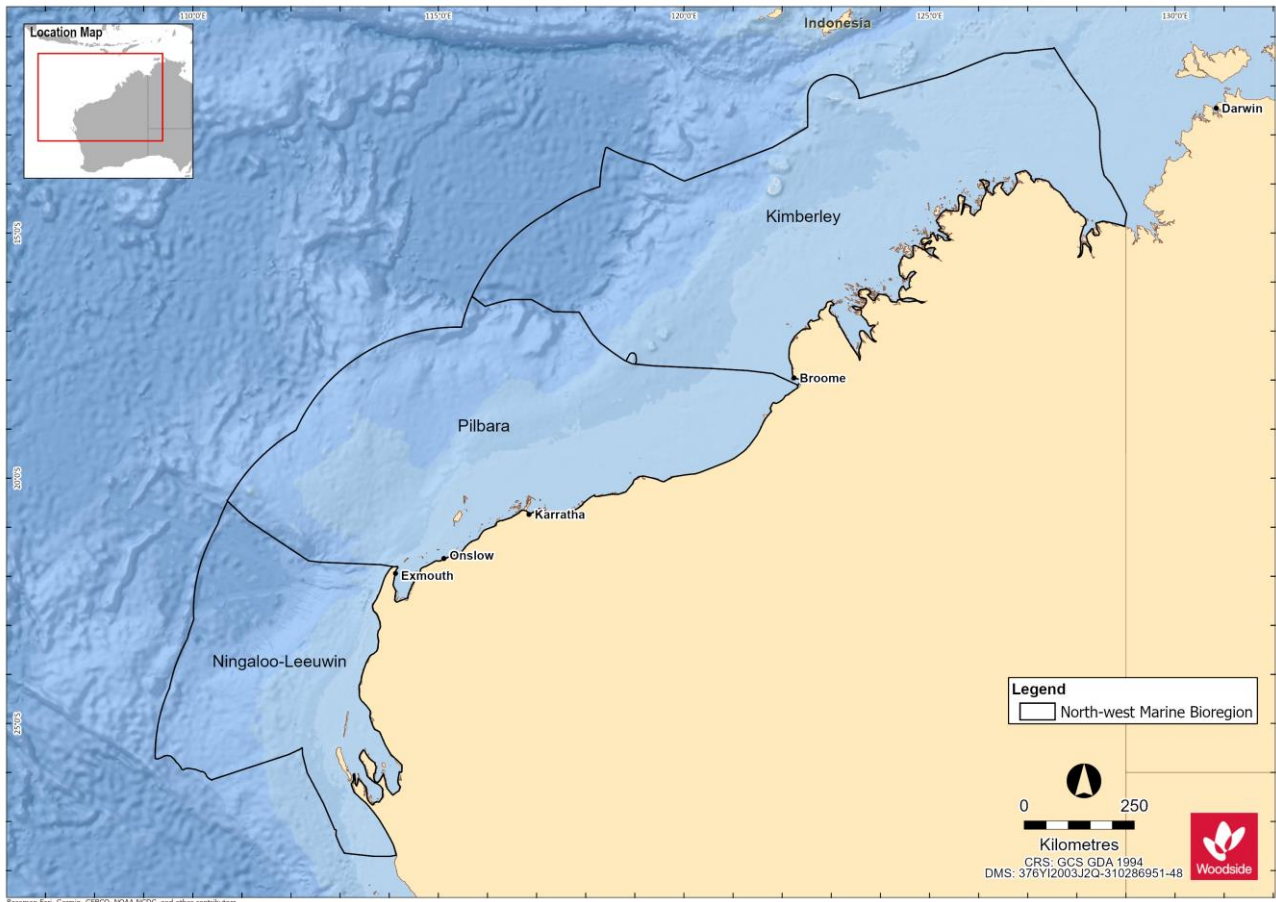


Figure 2-1. The marine systems of the North-west Marine Region (NWMR)

**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).

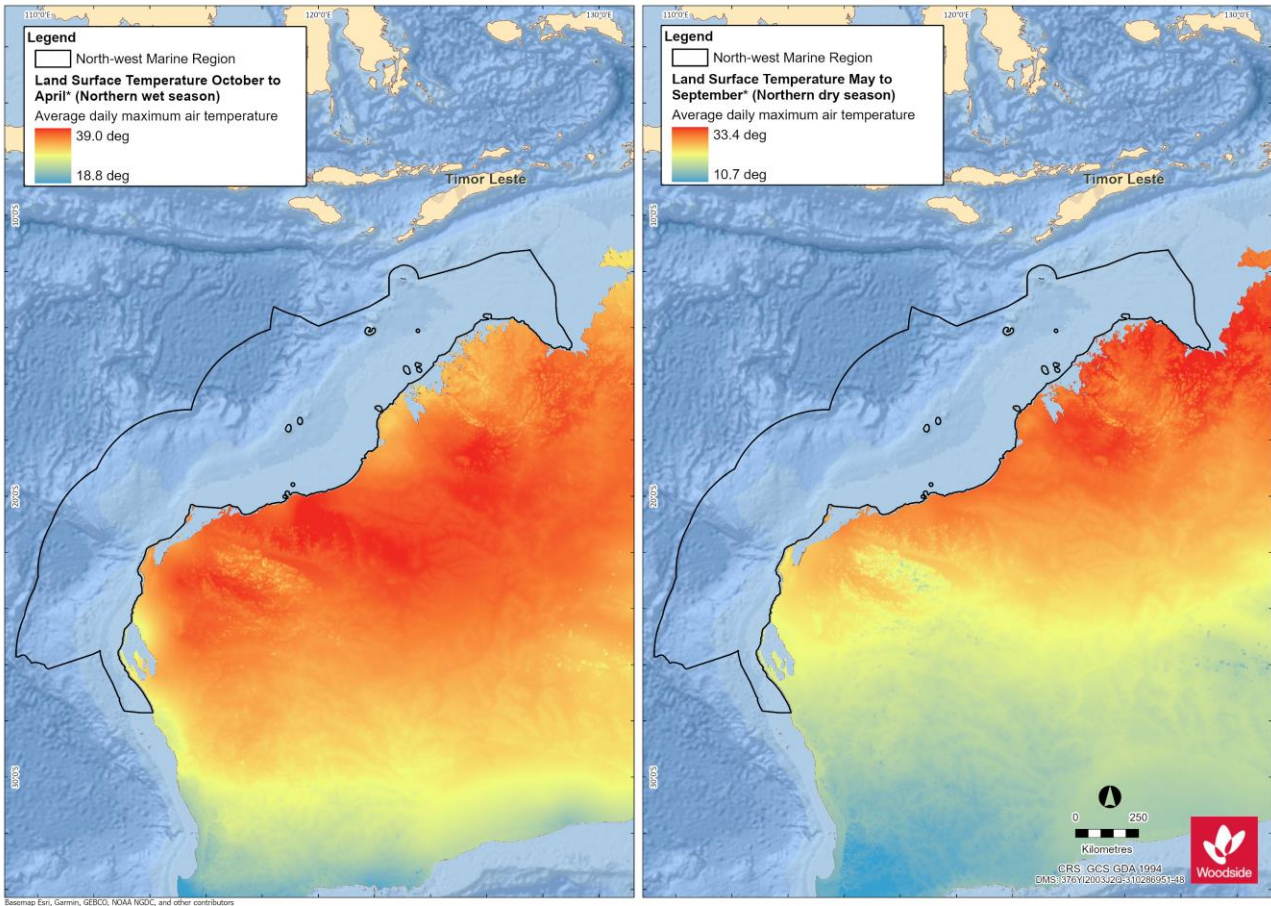
Table 2-3 NWMR climate and oceanography summary

Receptor	Description
<b>Meteorology</b>	
<b>Seasonal patterns</b>	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.
<b>Air temperature and rainfall</b>	In summer (between September and March), maximum daily temperatures range from 31°C to 33°C. During winter (May to July), mean daily temperatures range from 18°C to 31°C (BOM <sup>1</sup> ), refer to <b>Figure 2-2a</b> and <b>b</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.
<b>Wind</b>	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 <sup>-1</sup> . During winter, high-pressure cells over central Australia produce north-easterly to south-easterly winds with average speeds of between 6 and 8 ms <sup>-1</sup> . Refer to <b>Figure 2-3a</b> and <b>b</b> .
<b>Tropical cyclones</b>	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 <b>Figure 2-4</b> .
<b>Oceanography</b>	
<b>Ocean temperature</b>	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 <b>Figure 2-5a</b> and <b>b</b> .
<b>Currents</b>	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 <b>Figure 2-6</b> .  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 <i>et al.</i> , 2018).  Local physical oceanography is strongly influenced by the large-scale water movements of the Indonesian Throughflow (Liu <i>et al.</i> 2015; Sutton <i>et al.</i> 2019). Typically, a warm and well-mixed oligotrophic surface layer and a cooler and more nutrient rich, deeper water layer (Menezes <i>et al.</i> 2013).
<b>Waves</b>	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 <i>et al.</i> , 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).
<b>Tides</b>	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.

<sup>1</sup> [http://www.bom.gov.au/jsp/ncc/climate\\_averages/temperature/index.jsp](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)**

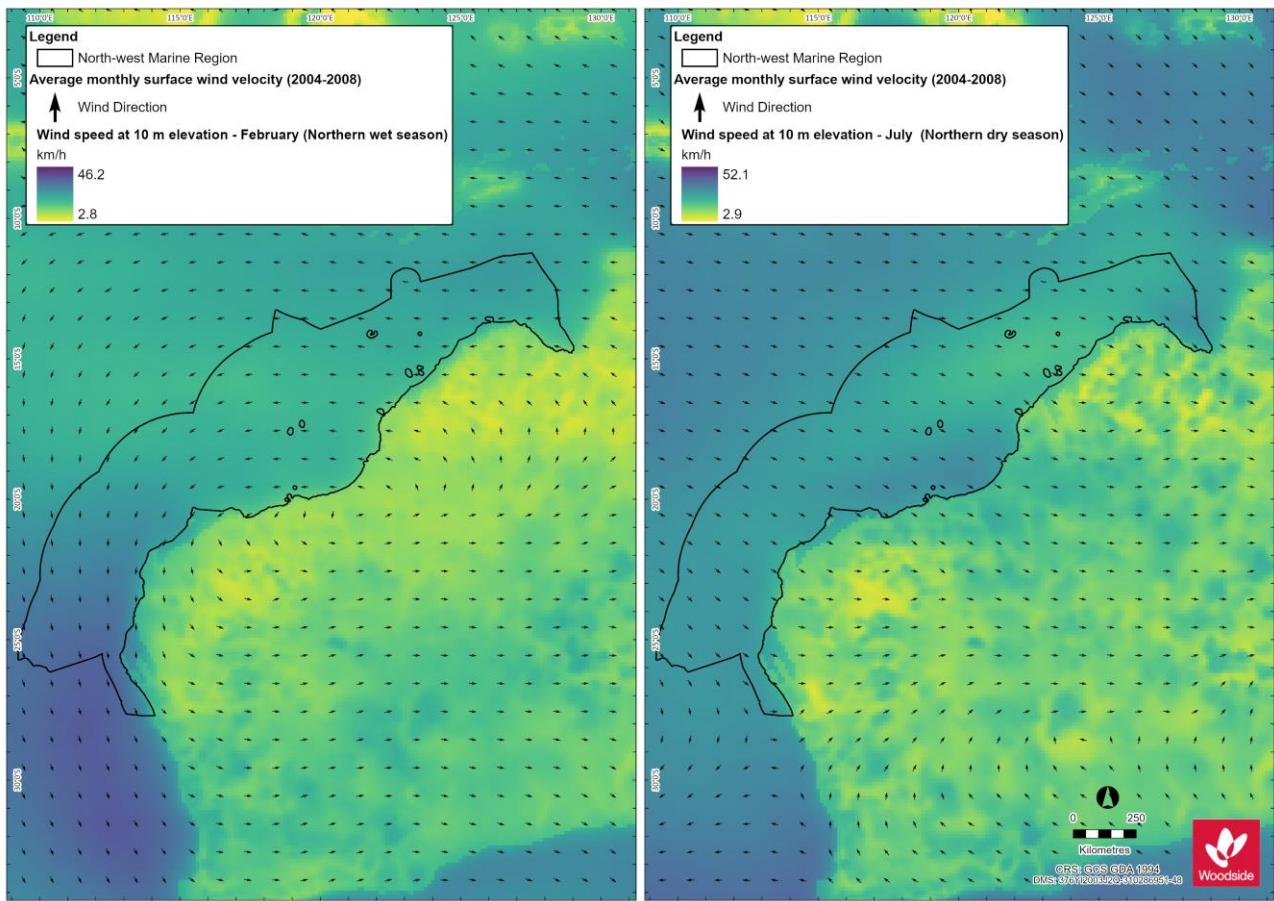


Figure 2-3. Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

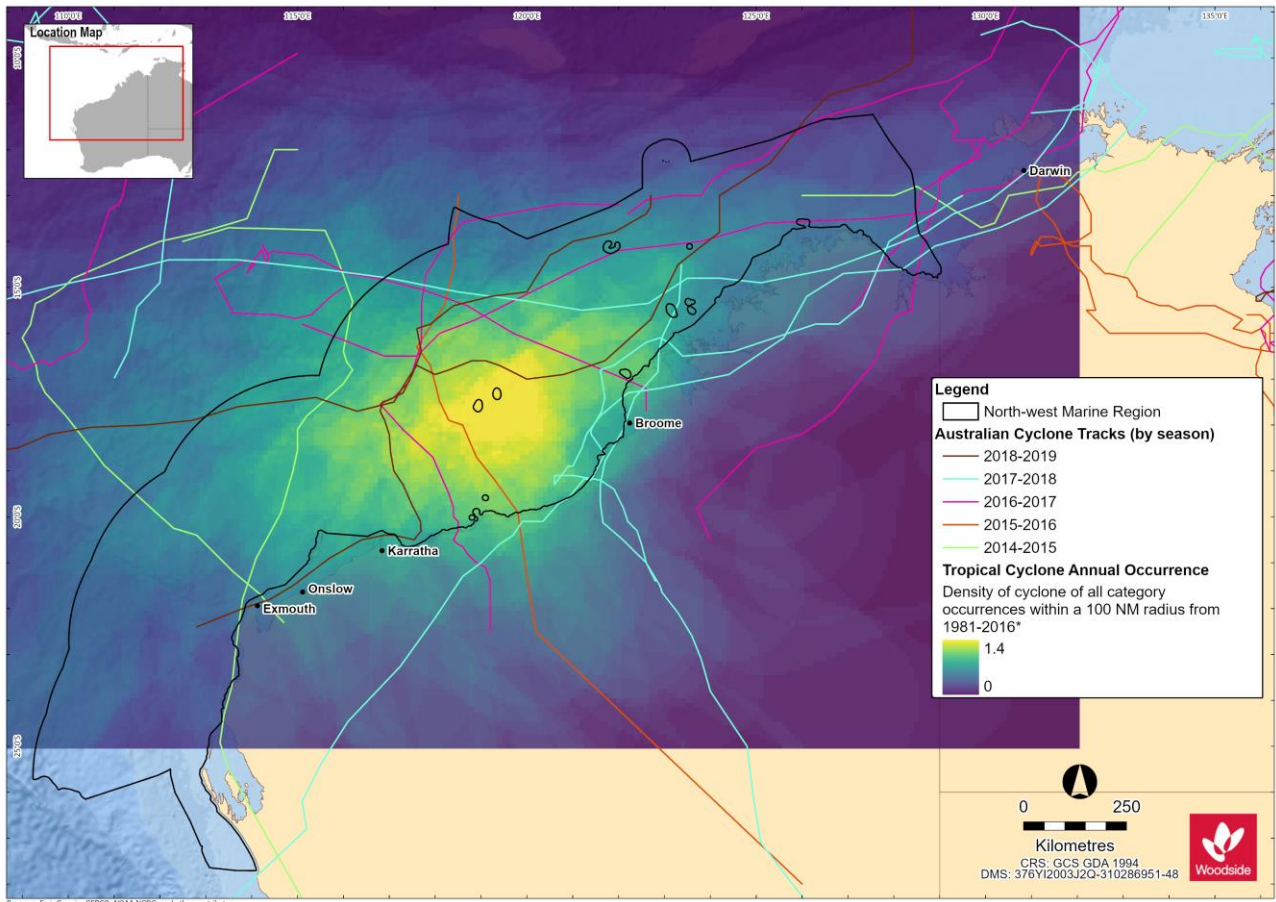
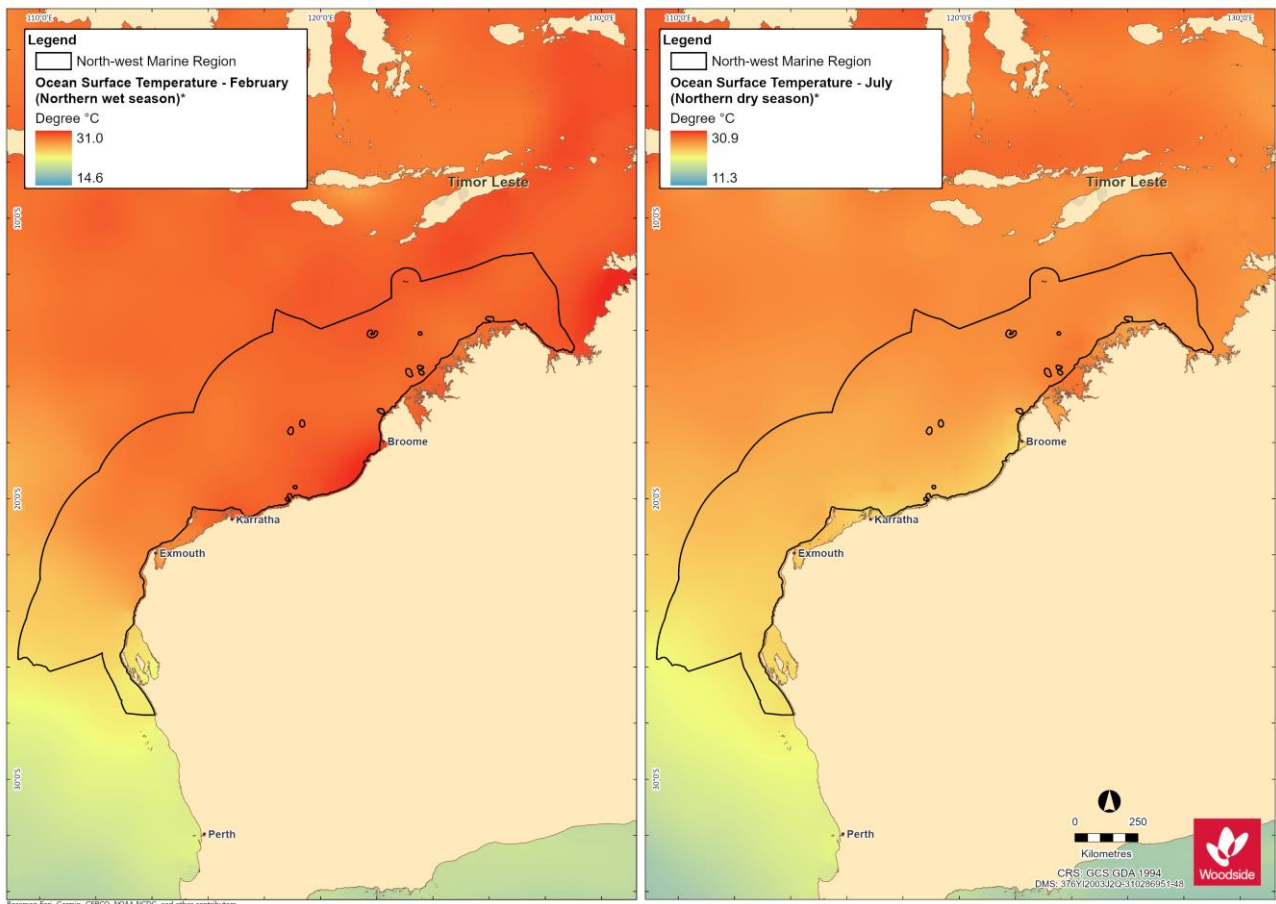


Figure 2-4. Tropical cyclone annual occurrence and cyclone tracks for NWMR





**Figure 2-5. Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)**



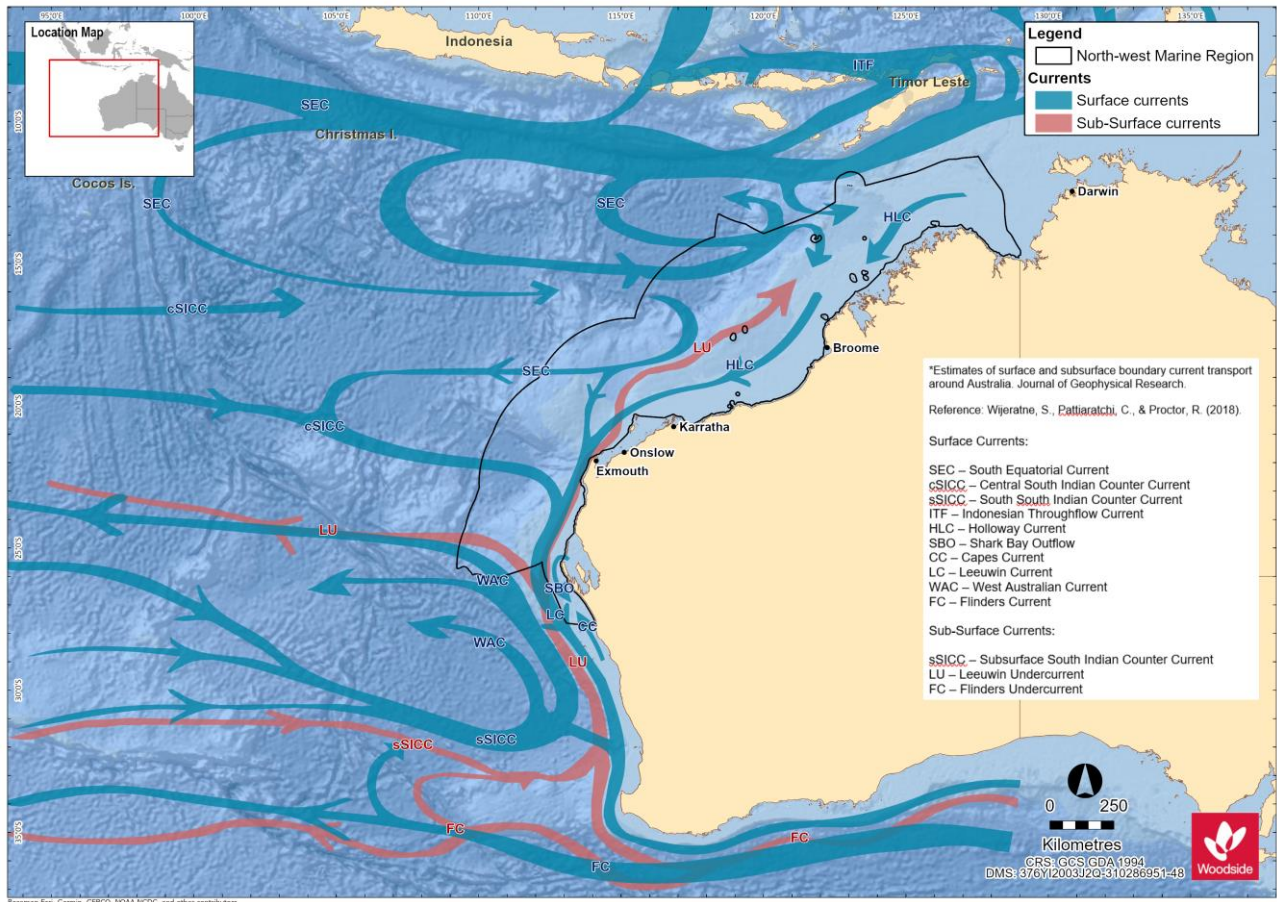


Figure 2-6. Ocean surface and sub-surface currents of the NWMR and wider region

### 2.3.1 Browse

**Table 2-4 Summary meteorology and oceanography for Browse (refer to Appendix B for supporting metocean figures)**

Receptor	Description
<b>Meteorology</b>	
<b>Seasonal patterns</b>	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.
<b>Air temperature</b>	The mean annual air temperature recorded at Troughton Island between 2010 and 2020 ranged from 30.1°C in 2011 to 32.6°C in 2016 and highest mean monthly air temperatures were recorded for the months of November and December (BOM, 2021b).
<b>Rainfall</b>	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).
<b>Wind</b>	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).
<b>Oceanography</b>	
<b>Currents</b>	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
<b>Meteorology</b>	
<b>Seasonal patterns</b>	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.
<b>Air temperature</b>	Air temperatures as measured at the North Rankin A platform on NWS ranged from a maximum average of 39.5°C in summer to a minimum average temperature of 15.6°C in winter (Woodside, 2012).
<b>Rainfall</b>	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 <i>et al.</i> 2003).
<b>Wind</b>	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 <i>et al.</i> 2003).
<b>Oceanography</b>	
<b>Currents</b>	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 <i>et al.</i> 2004 and Condie <i>et al.</i> 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
<b>Meteorology</b>	
<b>Seasonal patterns</b>	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.
<b>Air temperature</b>	Air temperatures in the North-west Cape area range from high summer temperatures (maximum average of 37.5°C) and mild winter temperatures (minimum average of 12.2°C).
<b>Rainfall</b>	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.
<b>Wind</b>	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.
<b>Oceanography</b>	
<b>Currents</b>	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.

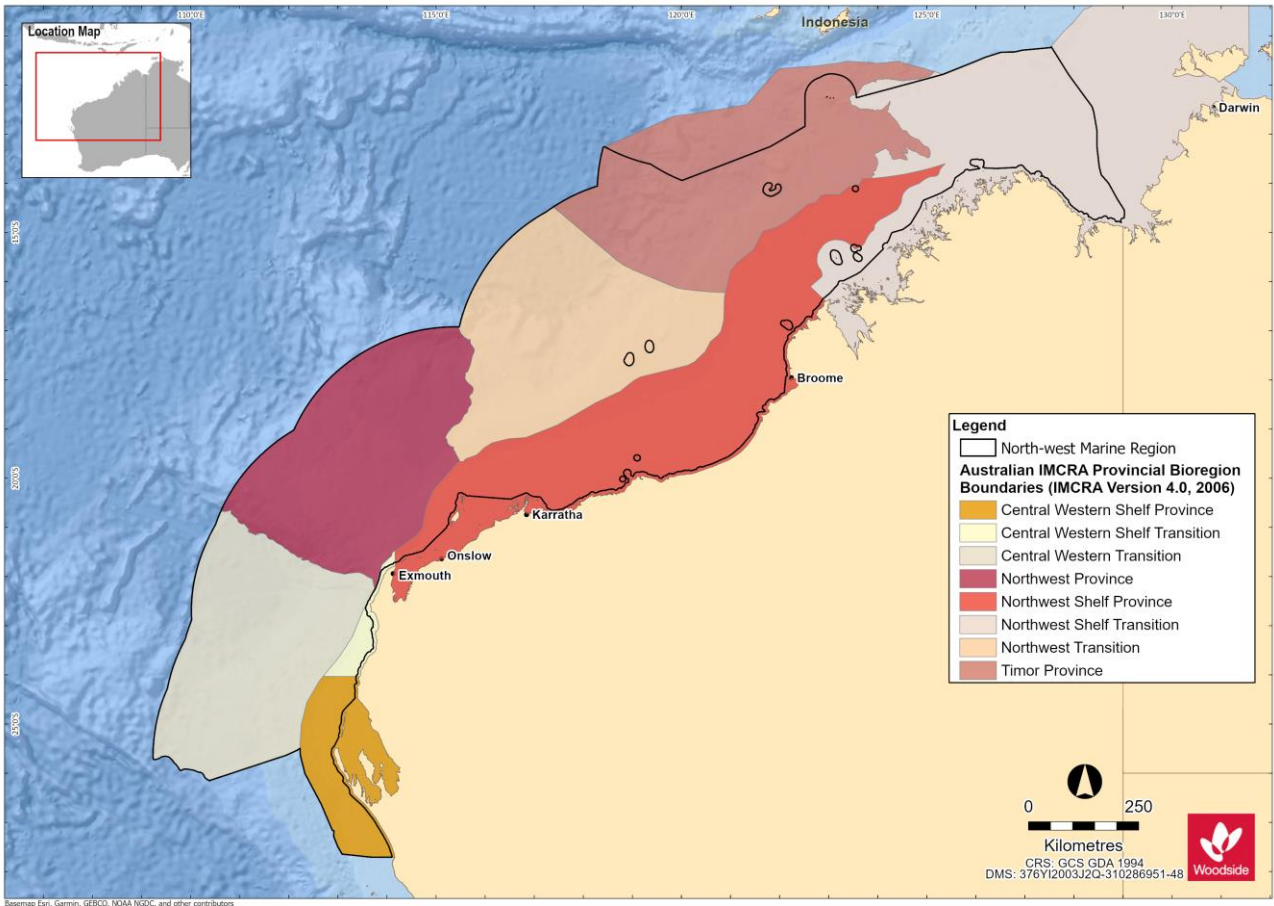


Figure 2-7. The eight provincial bioregions of the NWMR (Commonwealth of Australia, 2006)



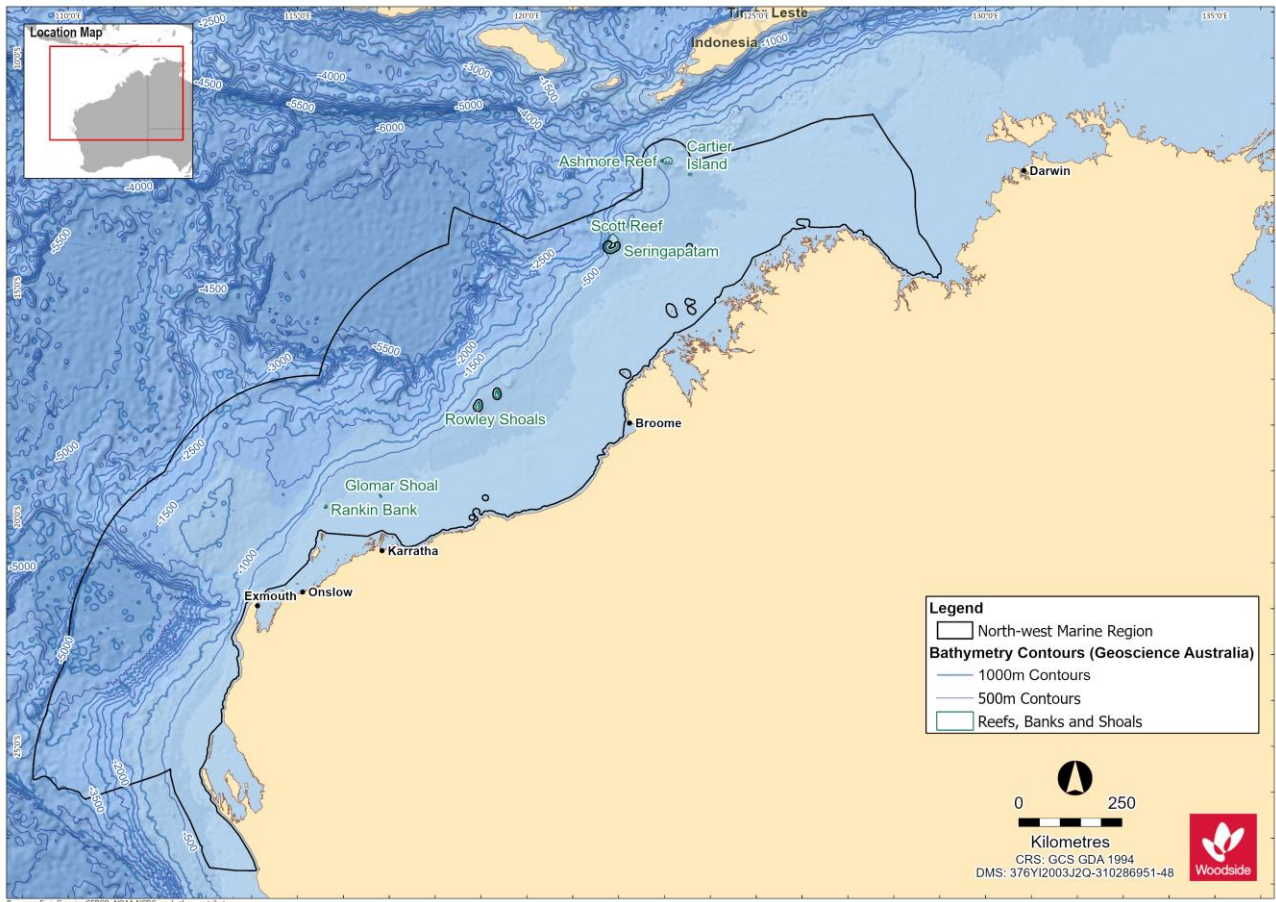


Figure 2-8. Bathymetry of the NWMR

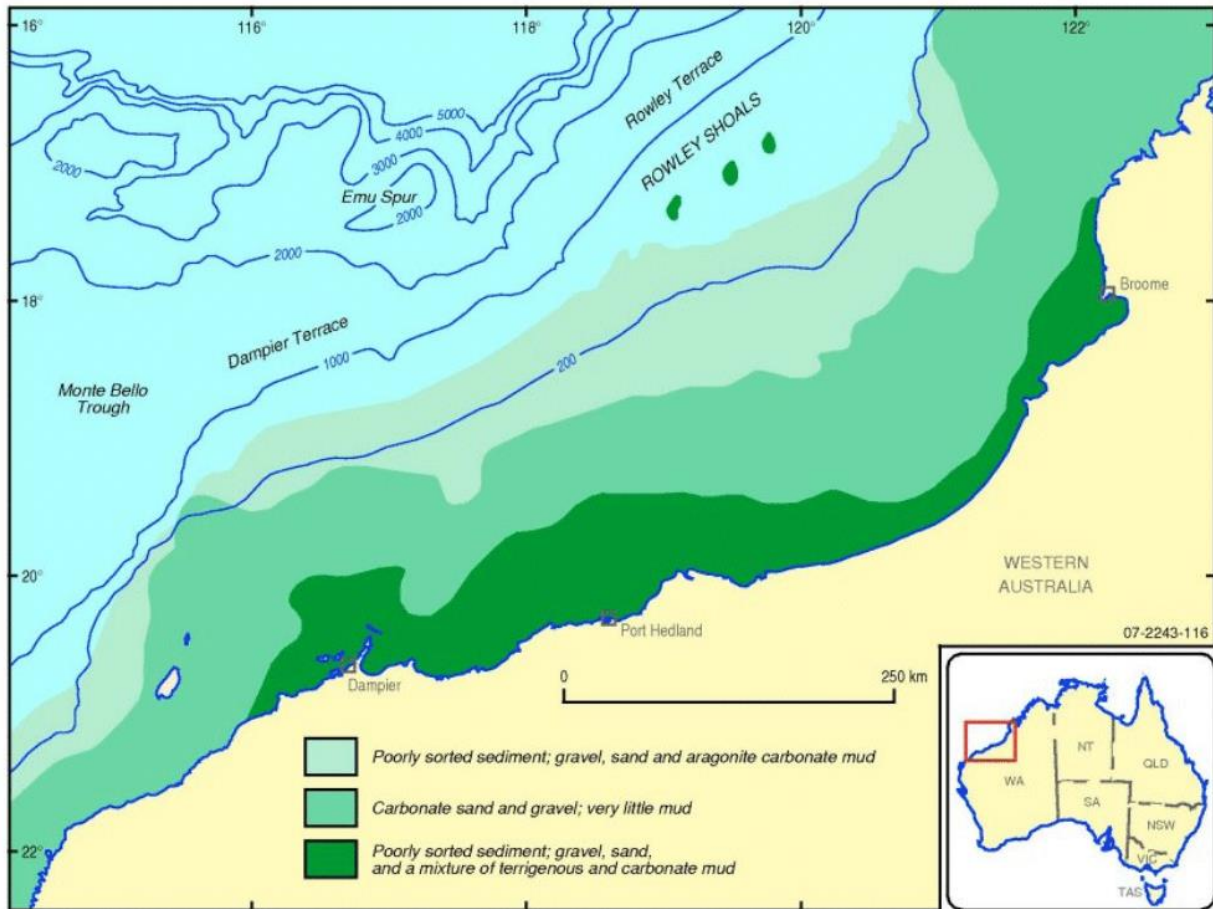


Figure 2-9. Overview of the seabed sediments of the NWMR (Baker *et al.*, 2008)

### 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**

<b>MNES</b>	<b>Number</b>	<b>Description</b>	<b>Section of this Document</b>
<b>World Heritage Properties</b>	2	Shark Bay The Ningaloo Coast	<b>Section 10</b>
<b>National Heritage Places</b>	5	Shark Bay The Ningaloo Coast The West Kimberley The Dampier Archipelago (including Burrup Peninsula) Dirk Hartog Landing Site 1616	<b>Section 10</b>
<b>Wetlands of International Importance (Ramsar)</b>	3	Ashmore Reef National Nature Reserve Eighty Mile Beach Roebuck Bay <sup>1</sup>	<b>Section 10</b>
<b>Commonwealth Marine Area</b>	2	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	<b>Section 9</b> <b>Section 10</b>
<b>Listed Threatened Ecological Communities</b>	1	Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Terrestrial community and not considered further
<b>Listed Threatened Species</b>	70	Refer NWMR PMST report ( <b>Appendix A</b> )	<b>Section 5 – Section 8</b>
<b>Listed Migratory Species</b>	84	Refer NWMR PMST report ( <b>Appendix A</b> )	<b>Section 5 – Section 8</b>

<sup>1</sup> 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 Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia Tuart ( <i>Eucalyptus gomphocephala</i> ) Woodlands and Forests of the Swan Coastal Plain ecological community	Terrestrial communities and not considered further
Listed Threatened Species	65	Refer SWMR PMST report ( <b>Appendix A</b> )	N/A
Listed Migratory Species	67	Refer SWMR PMST report ( <b>Appendix A</b> )	N/A

**Table 3-3 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the NMR**

<b>MNES</b>	<b>Number</b>	<b>Description</b>	<b>Section of this Document</b>
<b>World Heritage Properties</b>	0	N/A	N/A
<b>National Heritage Places</b>	0	N/A	N/A
<b>Wetlands of International Importance (Ramsar)</b>	0	N/A	N/A
<b>Commonwealth Marine Area</b>	2	EEZ and Territorial Sea KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	<b>Section 9</b> <b>Section 10</b>
<b>Listed Threatened Ecological Communities</b>	0	N/A	N/A
<b>Listed Threatened Species</b>	33	Refer NMR PMST report ( <b>Appendix A</b> )	N/A
<b>Listed Migratory Species</b>	70	Refer NMR PMST report ( <b>Appendix A</b> )	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 EPBC 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)
<b>Marine Mammals</b>	
Blue whale	Conservation Management Plan for the Blue Whale: A Recovery Plan under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 2015–2025 (Commonwealth of Australia, 2015a)
Southern right whale	Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 2011–2021 (DSEWPAC, 2012d)
Sei whale	Conservation Advice <i>Balaenoptera borealis</i> sei whale (Threatened Species Scientific Committee, 2015a)
Humpback whale	Conservation Advice <i>Megaptera novaeangliae</i> humpback whale (Threatened Species Scientific Committee, 2015b)
Fin whale	Conservation Advice <i>Balaenoptera physalus</i> fin whale (Threatened Species Scientific Committee, 2015c)
Australian sea lion	Recovery Plan for the Australian Sea Lion ( <i>Neophoca cinerea</i> ) 2013 (DSEWPAC, 2013a) (due to expire in October 2023) Conservation Advice <i>Neophoca cinerea</i> Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)
<b>Marine Reptiles</b>	
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 <i>Aipysurus apraefrontalis</i> (Short-nosed Sea Snake) (DSEWPAC, 2011a)
Leaf-scaled sea snake	Approved Conservation Advice for <i>Aipysurus foliosquama</i> (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
<b>Fishes, Sharks, Rays and Sawfishes</b>	
Grey nurse shark (west coast population)	Recovery Plan for the Grey Nurse Shark ( <i>Carcharias taurus</i> ) 2014 (DOE, 2014)
White shark	Recovery Plan for the White Shark ( <i>Carcharodon carcharias</i> ) 2013 (DSEWPAC, 2013b)
Whale shark	Conservation Advice <i>Rhincodon typus</i> 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
<b>Seabirds</b>	
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 - <i>Papasula abbotti</i> (Threatened Species Scientific Committee, 2020b)
Australian fairy tern	Approved Conservation Advice for <i>Sterna nereis nereis</i> (Fairy Tern) (DSEWPAC, 2011d)
Australian lesser noddy	Conservation Advice <i>Anous tenuirostris melanops</i> Australian lesser noddy (Threatened Species Scientific Committee, 2015e)
Soft-plumaged petrel	Conservation Advice <i>Pterodroma mollis</i> soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
<b>Shorebirds</b>	
Migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c)
Eastern curlew, far eastern curlew	Conservation Advice <i>Numenius madagascariensis</i> eastern curlew (DOE, 2015a)
Curlew sandpiper	Conservation Advice <i>Calidris ferruginea</i> curlew sandpiper (DOE, 2015b)
Great knot	Conservation Advice <i>Calidris tenuirostris</i> Great knot (Threatened Species Scientific Committee, 2016a)
Red knot, knot	Conservation Advice <i>Calidris canutus</i> Red knot (Threatened Species Scientific Committee, 2016b)
Bar-tailed godwit ( <i>menzbieri</i> )	Conservation Advice <i>Limosa lapponica menzbieri</i> Bar-tailed godwit (northern Siberia) (Threatened Species Scientific Committee, 2016c)
Greater sand plover	Conservation Advice <i>Charadrius leschenaultii</i> Greater sand plover (Threatened Species Scientific Committee, 2016d)
Lesser sand plover	Conservation Advice <i>Charadrius mongolus</i> 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
<b>Offshore habitats and biological communities</b>				
<b>Soft sediment with infauna</b>	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.			
<b>Soft sediment with hard substrate outcropping</b>	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.			<b>Section 9</b>
	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	<b>Section 9</b>
<b>Coral Reef</b>	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	-	<b>Section 10</b>
<b>Seagrass and Macroalgae communities</b>	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. <i>et al.</i> , 2003; Wilson <i>et al.</i> , 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)		<b>Section 10</b>
<b>Filter Feeders/ heterotrophic</b>	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	<b>Section 10</b>

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Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
	systems such as Scott Reef	Ancient coastline at 125 m depth contour KEF		
<b>Sandy Beaches</b>	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	<b>Section 10</b>
<b>Nearshore/coastal habitats and biological communities</b>				
<b>Coral Reef</b>	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	<b>Section 10</b>
<b>Seagrass and Macroalgae communities</b>	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. <i>et al.</i> , 2003; Wilson <i>et al.</i> , 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	<b>Section 10</b>
<b>Filter Feeders/ heterotrophic</b>	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
<b>Mangroves</b>	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie <i>et al.</i> , 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 <i>et al.</i> , 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	
<b>Saltmarshes</b>	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	
<b>Sandy Beaches</b>	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
<b>Offshore</b>	
<b>Soft sediment with infauna</b>	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)
<b>Soft sediment with hard substrate outcropping</b>	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
<b>Coral Reef</b>	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.
<b>Filter Feeders/ heterotrophic</b>	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
<b>Nearshore</b>	
<b>Coral Reef</b>	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 Rottneest Island
<b>Seagrass and Macroalgae communities</b>	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 Rottneest Island

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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
<b>Filter Feeders/ heterotrophic</b>	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
<b>Mangroves</b>	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie <i>et al.</i> , 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 <i>et al.</i> , 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the SWMR. Houtman Abrolhos Islands
<b>Sandy Beaches</b>	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		
<b>Offshore habitats and biological communities</b>			
<b>Soft sediment with infauna</b>	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.		
<b>Soft sediment with hard substrate outcropping</b>	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		
<b>Coral Reef</b>	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 <i>et al.</i> , 1997)		
	Pinnacles of the Bonaparte Basin KEF Evans Shoal Tassie Shoal Blackwood Shoal		
<b>Filter Feeders/ heterotrophic</b>	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		
<b>Nearshore</b>			
<b>Coral Reef</b>	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		
<b>Seagrass and Macroalgae communities</b>	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		
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Habitat/Community	Location
<b>Filter Feeders/ heterotrophic</b>	<p>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.</p> <p>Cape Helveticus</p>
<b>Mangroves</b>	<p>Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie <i>et al.</i>, 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.</p> <p>Tiwi Islands Darwin Harbour The mainland coastline adjacent to the Daly River</p>
<b>Sandy Beaches</b>	<p>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.</p> <p>Tiwi Islands Cobourg Peninsula Joseph Bonaparte Gulf</p>

## 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	
<i>Rhincodon typus</i>	Whale shark	Vulnerable	Migratory	Marine	Other specially protected fauna	Conservation Advice <i>Rhincodon typus</i> whale shark. (Threatened Species Scientific Committee, 2015d)
<i>Carcharias taurus</i>	Grey nurse shark (west coast population)	Vulnerable	N/A	Marine	Vulnerable	Recovery Plan for the Grey Nurse Shark ( <i>Carcharias taurus</i> ) (DOE, 2014a)
<i>Carcharodon carcharias</i>	White shark	Vulnerable	Migratory	Marine	Vulnerable	Recovery Plan for the White Shark ( <i>Carcharodon carcharias</i> ) (DSEWPAC, 2013b)
<i>Isurus oxyrinchus</i>	Shortfin mako	N/A	Migratory	Marine	N/A	N/A
<i>Isurus paucus</i>	Longfin mako	N/A	Migratory	Marine	N/A	N/A
<i>Lamna nasus</i>	Porbeagle shark Mackerel shark	N/A	Migratory	Marine	N/A	N/A
<i>Carcharhinus longimanus</i>	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	N/A
<i>Anoxypristis cuspidata</i>	Narrow sawfish	N/A	Migratory	Marine	N/A	N/A
<i>Pristis clavata</i>	Dwarf sawfish	Vulnerable	Migratory	Marine	Priority	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
<i>Pristis pristis</i>	Largetooth (Freshwater) sawfish	Vulnerable	Migratory	Marine	Priority	
<i>Pristis zijsron</i>	Green sawfish	Vulnerable	Migratory	Marine	Vulnerable	
<i>Glyphis garricki</i>	Northern river shark	Endangered	N/A	Marine	Priority	
<i>Manta alfredi</i>	Reef manta ray	N/A	Migratory	Marine	N/A	N/A
<i>Manta birostris</i>	Giant manta ray	N/A	Migratory	Marine	N/A	N/A

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**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
<i>Hoplostethus atlanticus</i>	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
<i>Thunnus maccoyii</i>	Southern bluefin tuna	NWMR and SWMR	Threatened Species Scientific Committee (2010)
<i>Sphyrna lewini</i>	Scalloped hammerhead	NWMR, NMR and SWMR	Threatened Species Scientific Committee (2018)
<i>Centrophorus zeehaani</i>	Southern dogfish, Endeavour dogfish, Little gulper shark	SWMR	Threatened Species Scientific Committee (2013)
<i>Galeorhinus galeus</i>	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
<b>Whale shark</b>	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 <b>Table 5-3</b> for the BIA summary for the whale shark.
<b>Grey nurse shark (west coast population)</b>	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 <i>et al.</i> , 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 <i>et al.</i> , 2006). The NWMR represents the northern limit of the west coast population.

Species	Preferred Habitat and Diet	Habitat Location
<b>White shark</b>	<p>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 <i>et al.</i>, 2006; Bruce, 2008).</p> <p>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).</p>	<p>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).</p> <p>Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.</p>
<b>Shortfin mako</b>	<p>Preferred habitat: The shortfin mako shark is a pelagic species with a circumglobal, wide-ranging oceanic distribution in tropical and temperate seas (Mollet <i>et al.</i>, 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 <i>et al.</i>, 2011; Stevens <i>et al.</i>, 2010).</p> <p>Diet: Feeds on a variety of prey, such as teleost fishes, other sharks, marine mammals, and marine turtles (Campana <i>et al.</i>, 2005).</p>	<p>Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.</p>
<b>Longfin mako</b>	<p>Preferred habitat: A pelagic species with a wide-ranging oceanic distribution in tropical and temperate seas (Mollet <i>et al.</i>, 2000).</p> <p>Diet: Primarily teleost fishes and cephalopods (primarily squid) (Last and Stevens, 2009).</p>	<p>Records on longfin mako sharks are sporadic and their complete geographic range is not well known (Reardon <i>et al.</i>, 2006).</p> <p>Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.</p>
<b>Mackerel/Porbeagle shark</b>	<p>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 <i>et al.</i>, 2002). The porbeagle shark is known to dive to depths exceeding 1300 m (Campana <i>et al.</i>, 2010; Saunders <i>et al.</i>, 2011).</p> <p>Diet: Primarily teleost fish, elasmobranchs, and cephalopods (primarily squid) (Joyce <i>et al.</i>, 2002; Last and Stevens, 2009).</p>	<p>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).</p>
<b>Oceanic whitetip shark</b>	<p>Preferred habitat: The oceanic whitetip shark is globally distributed in warm-temperate and tropical oceans (Andrzejczek <i>et al.</i>, 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 <i>et al.</i>, 2013; D'Alberto <i>et al.</i>, 2017). The species is highly migratory, travelling large distances between shallow reef habitats in coastal waters and oceanic waters (Howey-Jordan <i>et al.</i>, 2013). The species does exhibit a strong preference for warm and shallow waters above 120 m.</p> <p>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.</p>	<p>Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.</p>

Species	Preferred Habitat and Diet	Habitat Location
<b>Narrow sawfish</b>	Preferred habitat <sup>1</sup> : Shallow coastal, estuarine, and riverine habitats, however it may occur in waters up to 40 m deep (D'Anastasi <i>et al.</i> , 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).
<b>Northern river shark</b>	Preferred habitat <sup>1</sup> : Rivers, tidal sections of large tropical estuarine systems and macrotidal embayments, as well as inshore and offshore marine habitats (Pillans <i>et al.</i> , 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 <i>et al.</i> , 2009). Diet: Variety of fish and crustaceans (Stevens <i>et al.</i> , 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 <i>et al.</i> , 2005; Thorburn, 2006; Field <i>et al.</i> , 2008; Pillans <i>et al.</i> , 2008, Whitty <i>et al.</i> , 2008; Wynen <i>et al.</i> , 2008).
<b>Large-tooth (Freshwater) sawfish</b>	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 <b>Table 5-3</b> for the BIA summary for the freshwater sawfish.
<b>Green sawfish</b>	Preferred habitat <sup>1</sup> : Inshore coastal environments including estuaries, river mouths, embayments, and along sandy and muddy beaches, as well as offshore marine habitat (Stevens <i>et al.</i> , 2005; Thorburn <i>et al.</i> , 2003). Diet: Schools of baitfish and prawns (Pogonoski <i>et al.</i> , 2002), molluscs and small crustaceans (Cliff and Wilson, 1994).	Refer <b>Table 5-3</b> for the BIA summary for the green sawfish.
<b>Dwarf sawfish</b>	Preferred habitat <sup>1</sup> : Shallow (2 to 3 m) silty coastal waters and estuarine habitats, occupying relatively restricted areas and moving only small distances (Stevens <i>et al.</i> , 2008) Diet: Shoaling fish such as mullet, molluscs, and small crustaceans (Cliff and Wilson, 1994).	Refer <b>Table 5-3</b> for the BIA summary for the dwarf sawfish.

<sup>1</sup> 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
<b>Reef manta ray</b>	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 <i>et al.</i> , 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.
<b>Giant manta ray</b>	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 <i>et al.</i> , 1997).

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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 <i>et al.</i> , 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
<b>Whale shark</b>	✓	✓	✓	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).
<b>Green sawfish</b>	✓	✓	-	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
<b>Largetooth (freshwater) sawfish</b>	✓	✓	-	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
<b>Dwarf sawfish</b>	✓	✓	-	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



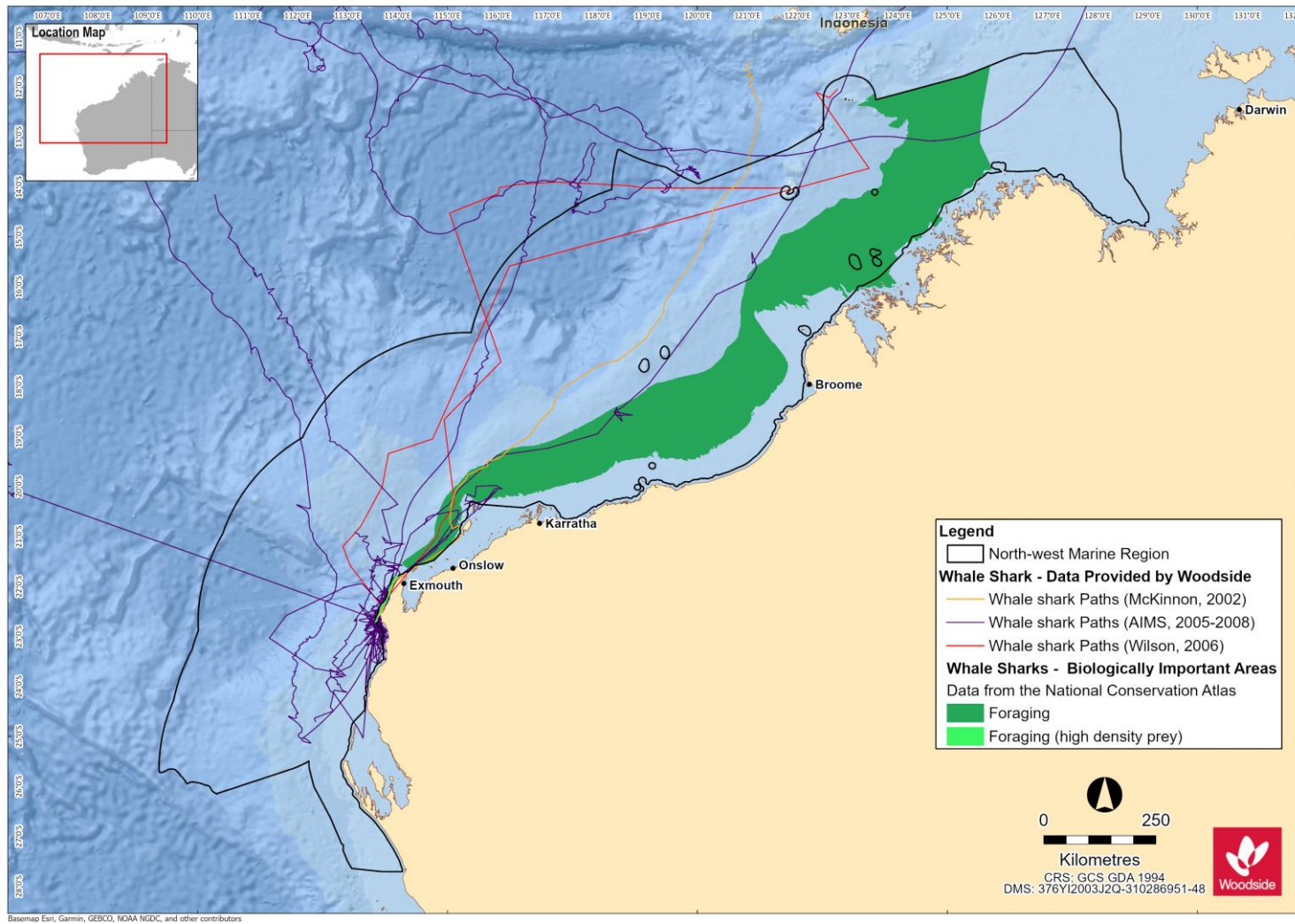


Figure 5-1 Whale shark BIAs for the NWMR and tagged whale shark tracks

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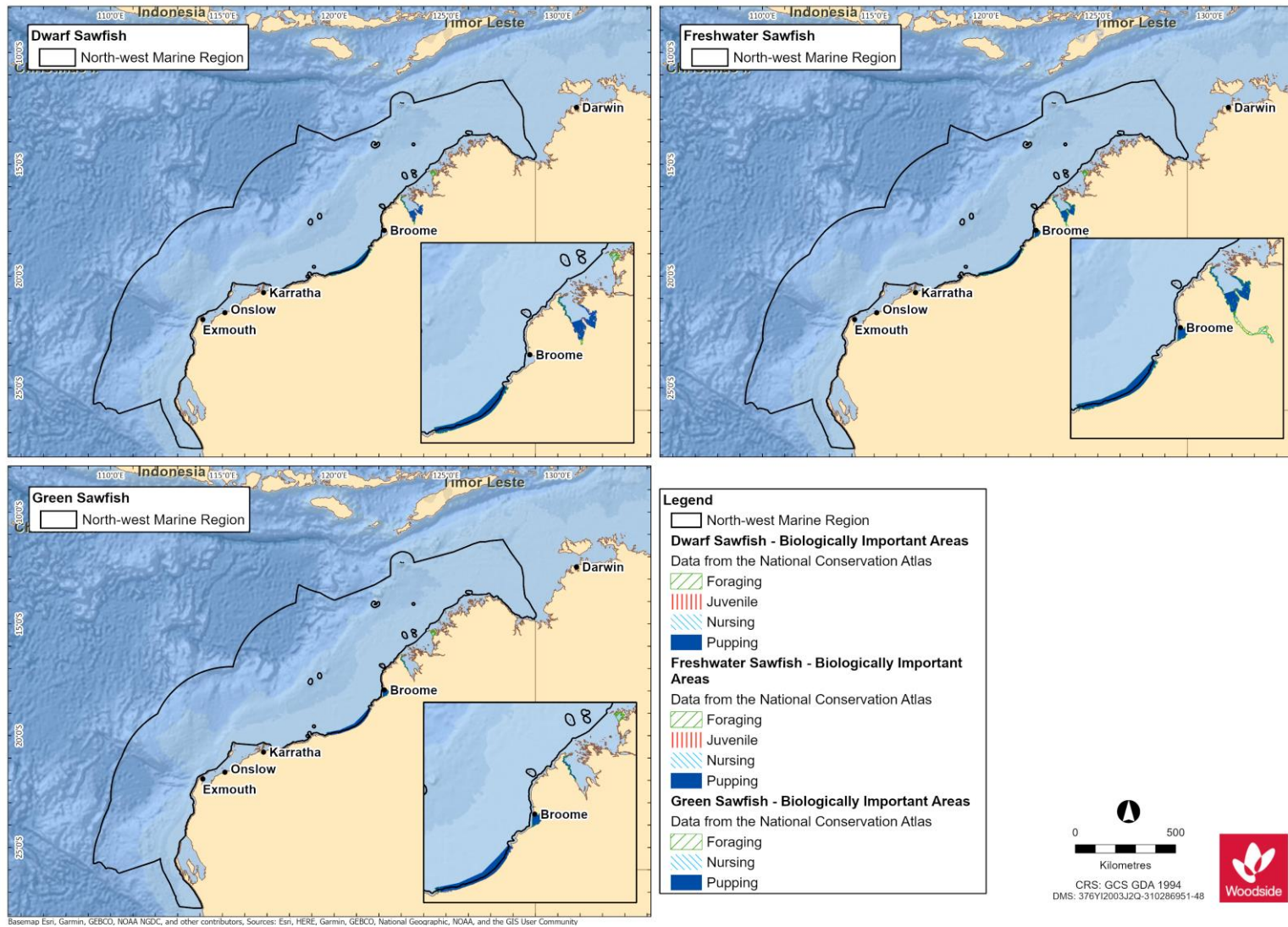


Figure 5-2 Sawfish BIAs for the NWMR

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## 5.4 Fish Assemblages of the NWMR

### 5.4.1 Regional Context for Fish Assemblages of NWMR

The NWMR contains a diverse range of fishes of tropical Indo-west Pacific affinity (Allen *et al.*, 1988). The region is characterised by the highest level of endemism and species diversity compared with other areas of the Australian continental slope. Last *et al.* (2005) recorded 1431 species from the three bioregions encompassing the continental slope, whilst also acknowledging some information gaps.

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 benthopelagic 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	
<i>Caretta caretta</i>	Loggerhead turtle	Endangered	Migratory	Marine	Endangered	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017)
<i>Chelonia mydas</i>	Green turtle	Vulnerable	Migratory	Marine	Vulnerable	
<i>Dermochelys coriacea</i>	Leatherback turtle	Endangered	Migratory	Marine	Vulnerable	
<i>Eretmochelys imbricata</i>	Hawksbill turtle	Vulnerable	Migratory	Marine	Vulnerable	
<i>Natator depressus</i>	Flatback turtle	Vulnerable	Migratory	Marine	Vulnerable	
<i>Lepidochelys olivacea</i>	Olive ridley turtle	Endangered	Migratory	Marine	Vulnerable	
<i>Aipysurus apraefrontalis</i>	Short-nosed sea snake	Critically endangered	N/A	Marine	Critically endangered	Approved Conservation Advice for <i>Aipysurus apraefrontalis</i> (Short-nosed Sea Snake) (DSEWPAC, 2011a)
<i>Aipysurus foliosquama</i>	Leaf-scaled sea snake	Critically endangered	N/A	Marine	Critically endangered	Approved Conservation Advice for <i>Aipysurus foliosquama</i> (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
<i>Crocodylus porosus</i>	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).

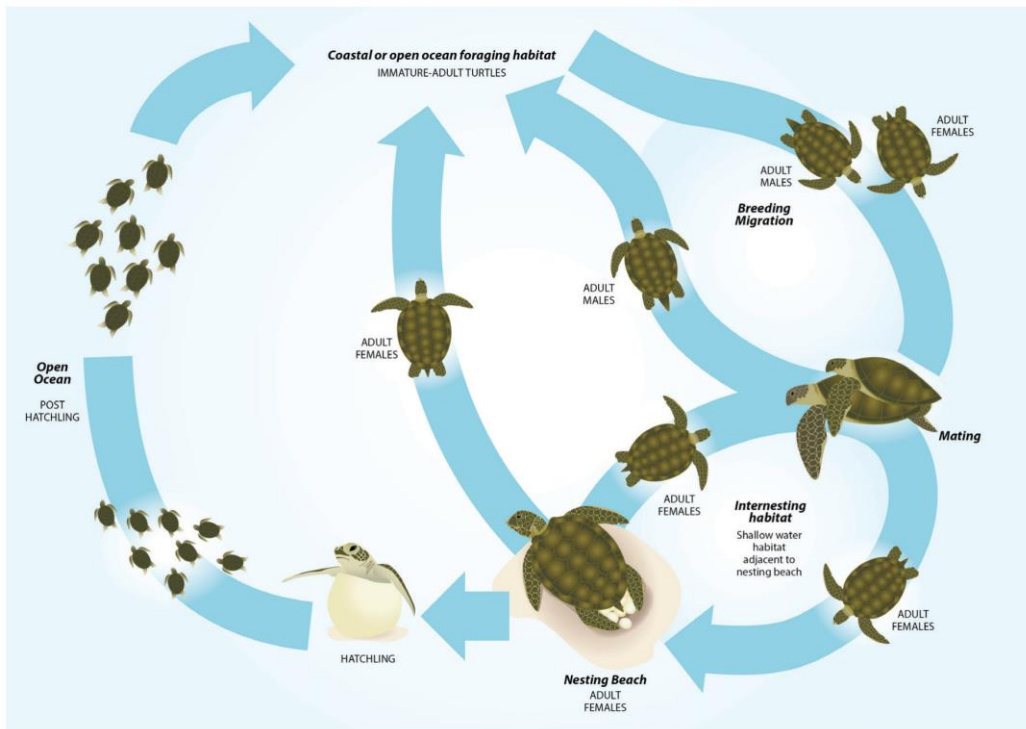


Figure 6-1 Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

### 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 <sup>1</sup> )	Internesting Buffer	Seasonality-Nesting	Preferred Habitat <sup>2</sup>
<b>Green Turtle</b>							
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	
<b>Hawksbill Turtle</b>							
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.

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Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (* Major Rookery <sup>1</sup> )	Internesting Buffer	Seasonality-Nesting	Preferred Habitat <sup>2</sup>
<b>Flatback Turtle</b>							
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 <sup>1</sup> )	Interesting Buffer	Seasonality-Nesting	Preferred Habitat <sup>2</sup>
<b>Loggerhead Turtle</b>							
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.

<sup>1</sup> Major rookeries as outlined in the Recovery Plan (Commonwealth of Australia, 2017)

<sup>2</sup> Preferred habitat as outlined in the Recovery Plan (Commonwealth of Australia, 2017)

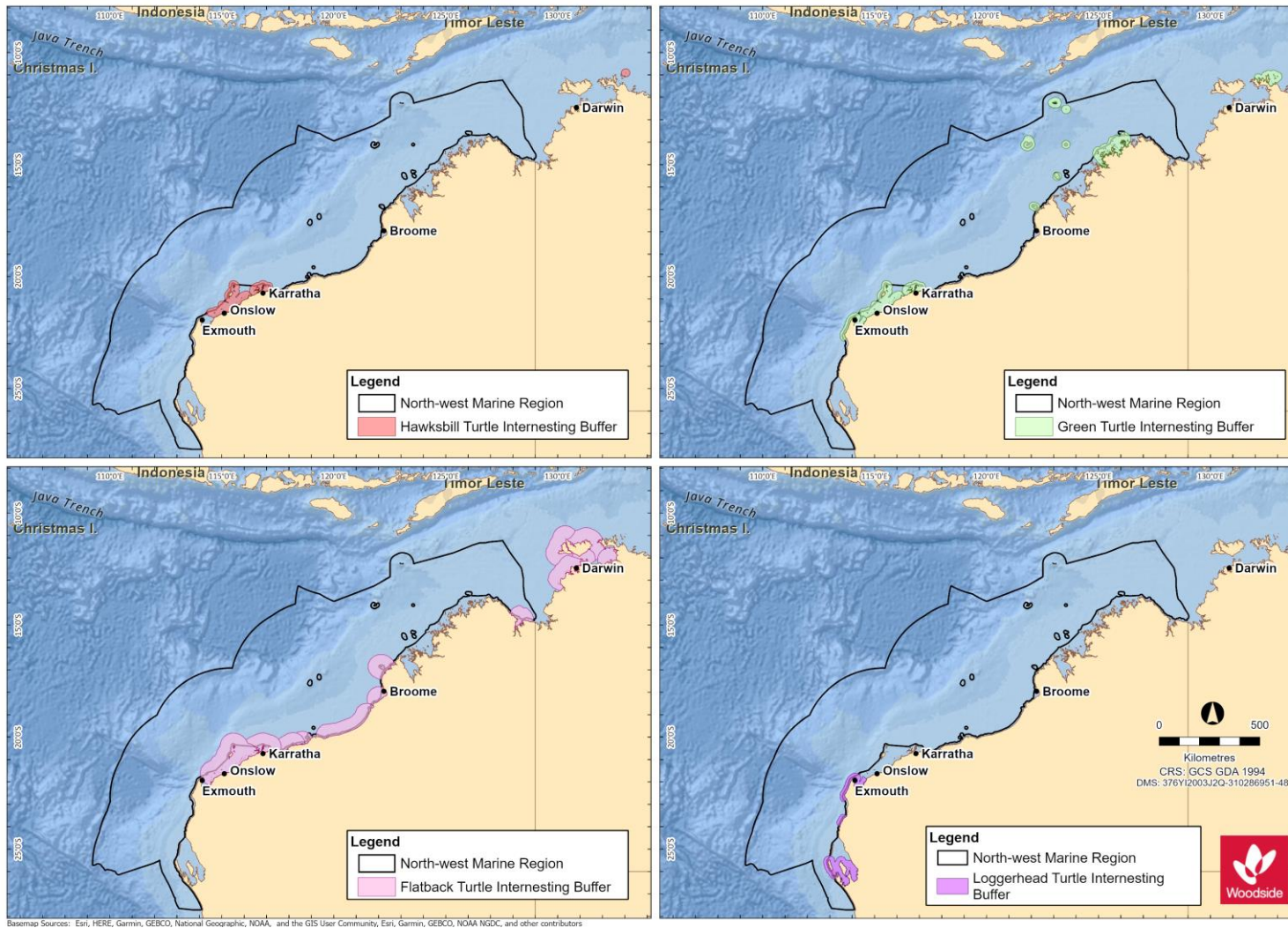


Figure 6-2 Marine turtle species habitat critical to survival (nesting beaches and interesting buffers) for the NWMR

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### 6.3 Marine Turtle Biological Important Areas in the NWMR

A review of the National Conservation Values Atlas (DAWE, 2020<sup>2</sup>) identified BIAs for the four marine turtle species that occur within the NWMR. These are described in **Table 6-3**. Note that nesting and interesting 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 interesting areas (refer **Table 6-2**).

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<sup>2</sup> <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 <sup>3</sup>
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 <i>et al.</i> , 1992). Ferreira <i>et al.</i> (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).

<sup>3</sup> Migration BIA does not exist for Marine Turtles – general information provided.

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Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration <sup>3</sup>
					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 <i>Significant Impact Guidelines 1.1 – Matters of National Environmental Significance</i> . 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 <i>et al.</i> , 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).

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Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration <sup>3</sup>
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.



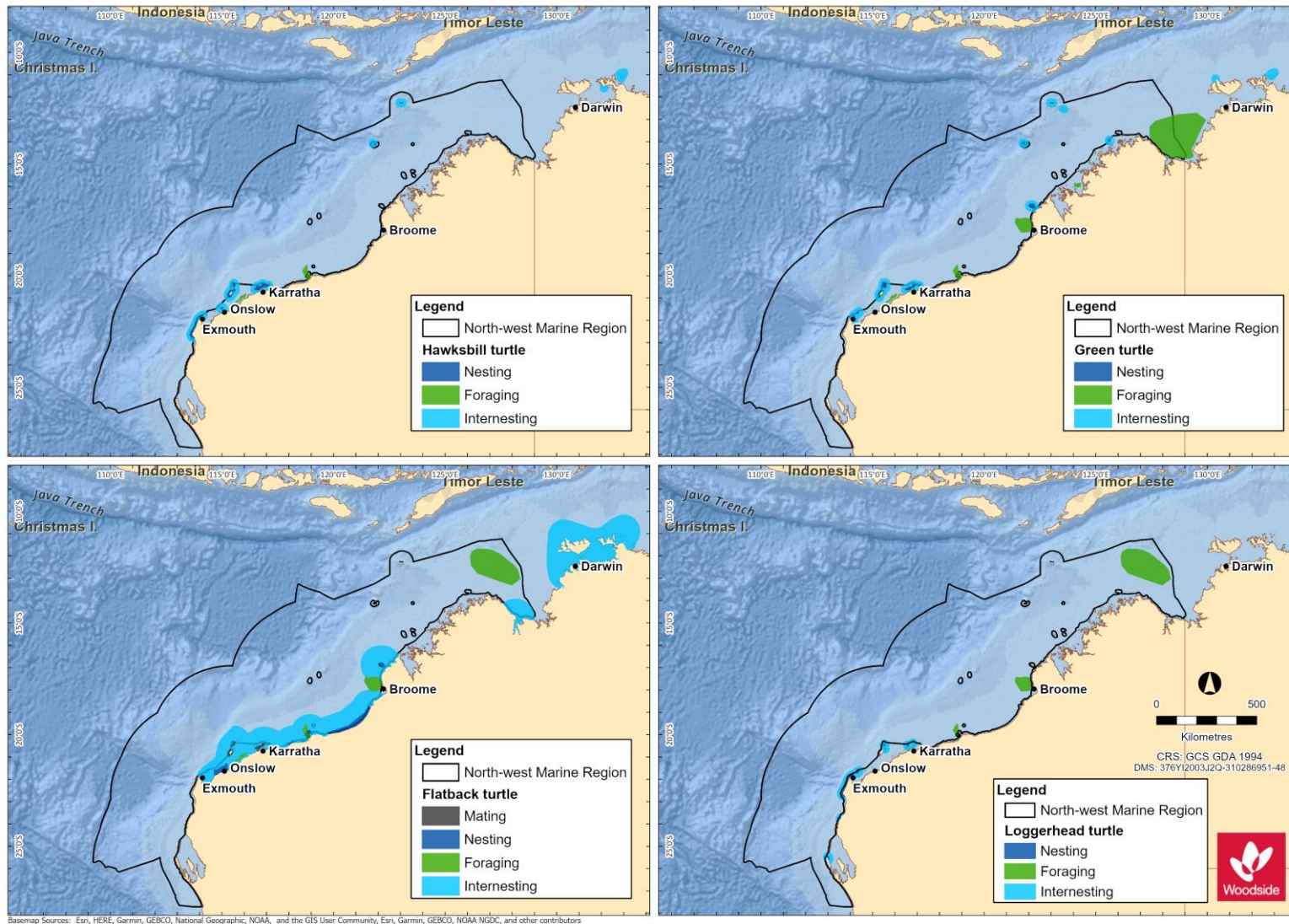


Figure 6-3 Marine turtle species BIA within the NWMR

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## 6.4 Marine Turtle Summary for NWMR

Six of the seven marine turtle species occur within the Woodside activity areas. Across all three areas, globally significant breeding populations of four marine turtle species; the green, hawksbill, flatback and loggerhead turtle, have been recorded.

However, offshore waters do not represent biologically important habitat for marine turtles in any of the three Woodside activity areas. Isolated records of transient individuals (on post-nesting migration) are expected, but there is no evidence of important habitat or behaviours for marine turtles in 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
<b>Green Turtle</b>	
Ashmore Reef Stock (G-AR)	<p>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).</p> <p>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).</p> <p>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).</p>
Scott Reef-Browse Island Stock (G-ScBr)	<p>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.</p> <p>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).</p> <p>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).</p> <p>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 <i>et al.</i>, 2021).</p>

Species / Genetic Stock	Key Information
<b>Flatback Turtle</b>	
Cape Domett Stock (F-CD)	<p>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 <i>et al.</i>, 2008).</p> <p>Designated habitat critical for the F-CD stock are the nesting locations of Cape Domett and Lacrosse Island, and an interesting buffer of 60 km radius around these rookeries, year-round with peak interesting activity occurring July to September.</p> <p>Extending further than the habitat critical interesting buffer, an interesting buffer BIA of 80 km is located at Cape Domett and Lacrosse Island.</p>

#### 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
<b>Green Turtle</b>	
NWS Stock (G-NWS)	<p>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).</p> <p>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 interesting buffer of 20 km radius around these rookeries, November to March.</p>
<b>Hawksbill Turtle</b>	
Western Australia Stock (H-WA)	<p>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 <i>et al.</i>, 2016).</p> <p>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 interesting buffer of 20 km radius around these rookeries, October to February.</p>
<b>Flatback Turtle</b>	
South-west Kimberley Stock (F-swKim)	<p>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.</p> <p>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 interesting buffer of 60 km radius around these rookeries, October to March.</p>

Species / Genetic Stock	Key Information
Pilbara Stock (F-Pil)	<p>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 interesting buffer of 60 km radius around these rookeries, October to March.</p> <p>Extending further than the habitat critical interesting buffer, a year-round interesting 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 interesting buffer is the legally recognised area of protection under the EPBC Act <i>Significant Impact Guidelines 1.1 – Matters of National Environmental Significance</i>.</p> <p>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).</p>

### 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
<b>Green Turtle</b>	
NWS Stock (G-NWS)	<p>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).</p> <p>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 interesting buffer of 20 km radius around the rookery, November to March.</p>
<b>Loggerhead Turtle</b>	
Western Australia Stock (LH-WA)	<p>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).</p> <p>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 interesting buffer of 20 km radius around these rookeries, November to May.</p> <p>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 <i>et al.</i>, 2019).</p>



## 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<sup>2</sup> 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
<b>Short-nosed sea snake</b>	Preferred habitat: Primarily on the reef flats or in shallow waters of the outer reef edges to depths of 10 m (Minton <i>et al.</i> , 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 <i>et al.</i> , 2020).
<b>Leaf-scaled sea snake</b>	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 <i>et al.</i> , 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	
<b>Cetaceans - Mysticeti</b>						
<i>Balaenoptera musculus</i>	Blue whale	Endangered	Migratory	Cetacean	Endangered	Conservation Management Plan for the Blue Whale - A Recovery Plan under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 2015-2025 (Commonwealth of Australia, 2015a)
<i>Eubalaena australis</i>	Southern right whale	Endangered	Migratory	Cetacean	Vulnerable	Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> 2011-2021 (DSEWPAC, 2012d)
<i>Balaenoptera borealis</i>	Sei whale	Vulnerable	Migratory	Cetacean	Endangered	Conservation Advice <i>Balaenoptera borealis</i> sei whale (Threatened Species Scientific Committee, 2015a)
<i>Megaptera novaeangliae</i>	Humpback whale	Vulnerable	Migratory	Cetacean	Conservation dependent	Conservation Advice <i>Megaptera novaeangliae</i> humpback whale (Threatened Species Scientific Committee, 2015b)
<i>Balaenoptera physalus</i>	Fin whale	Vulnerable	Migratory	Cetacean	Endangered	Conservation Advice <i>Balaenoptera physalus</i> fin whale (Threatened Species Scientific Committee, 2015c)
<i>Balaenoptera edeni</i>	Bryde's whale	N/A	Migratory	Cetacean	N/A	N/A
<i>Balaenoptera bonaerensis</i>	Antarctic minke whale	N/A	Migratory	Cetacean	N/A	N/A
<b>Cetaceans - Odontoceti</b>						
<i>Physeter macrocephalus</i>	Sperm whale	N/A	Migratory	Cetacean	Vulnerable	N/A
<i>Orcinus orca</i>	Killer whale	N/A	Migratory	Cetacean	N/A	N/A
<i>Orcaella heinsohni</i>	Australian snubfin dolphin	N/A	Migratory	Cetacean	Priority	N/A
<i>Sousa chinensis</i>	Indo-Pacific humpback dolphin	N/A	Migratory	Cetacean	Priority	N/A

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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	
<i>Tursiops aduncus</i>	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	N/A	Migratory	Cetacean	N/A	N/A
<b>Sirenians and Pinnipeds</b>						
<i>Dugong dugon</i>	Dugong	N/A	Migratory	Marine	Other protected fauna	N/A
<i>Neophoca cinerea</i>	Australian sea lion	Endangered	N/A	Marine	Vulnerable	Recovery Plan for the Australian Sea Lion ( <i>Neophoca cinerea</i> ) 2013 (DSEWPAC, 2013a) Conservation Advice <i>Neophoca cinerea</i> 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
<b>Baleen whales (Mysticeti)</b>	
<b>Humpback whale</b>	<p>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 <i>et al.</i>, 2019; Hedley <i>et al.</i>, 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 <i>et al.</i>, 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 Salgado-Kent <i>et al.</i> (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).</p> <p>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 <i>et al.</i>, 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 <i>et al.</i>, 2018).</p> <p>There are BIAs for migration and breeding and calving for the humpback whale along the WA coast and within the NWMR (refer <b>Table 7-3</b> and <b>Figure 7-1</b>).</p>
<b>Blue whale</b>	<p>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 (<i>Balaenoptera musculus</i>) and the 'pygmy' blue whale (<i>Balaenoptera musculus breviceuda</i>) (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.</p> <p>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 <i>et al.</i> (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.</p> <p>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 <i>et al.</i> (2008) (based on photographic mark and recapture) calculated between 712 and 1754 individuals, but both estimates did not account for animals</p>

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Species	Key Information
	<p>travelling further west into the Indian Ocean (McCauley <i>et al.</i>, 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 <i>et al.</i>, 2018).</p> <p>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 <i>et al.</i>, 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).</p> <p>Refer <b>Table 7-3</b> and <b>Figure 7-2</b> 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.</p>
<b>Bryde's whale</b>	<p>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 <i>et al.</i>, 1996). The species is known to exhibit inshore and offshore forms in other international locations that vary in morphology and migratory behaviours (Bannister <i>et al.</i>, 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 <i>et al.</i>, 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).</p> <p>There are no identified BIAs for this species in the National Conservation Values Atlas.</p>
<b>Southern right whale</b>	<p>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 <i>et al.</i>, 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).</p> <p>There are no identified BIAs for this species in the NWMR.</p>
<b>Antarctic minke whale</b>	<p>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 <i>et al.</i>, 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.</p> <p>There are no identified BIAs for this species in the National Conservation Values Atlas.</p>
<b>Sei whale</b>	<p>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 <i>et al.</i>, 1996; Prieto <i>et al.</i>, 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 <i>et al.</i>, 2012), and exhibits a migration pathway influenced by seasonal feeding and breeding patterns. Sei whales have been infrequently recorded in Australian waters (Bannister <i>et al.</i>, 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</p>

Species	Key Information
	<p>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).</p> <p>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.</p>
<b>Fin whale</b>	<p>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 <i>et al.</i>, 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 <i>et al.</i>, 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.</p> <p>Fin whales have been recorded vocalising off the Perth Canyon, WA, between January and April 2000 (McCauley <i>et al.</i>, 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 <i>et al.</i> (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 <i>et al.</i>, 2019). Some whales were found to continue migrating as far north as Dampier (Aulich <i>et al.</i>, 2019).</p> <p>There are no identified BIAs for this species in the National Conservation Values Atlas.</p>
<b>Toothed whales (Odontoceti)</b>	
<b>Sperm whale</b>	<p>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 <i>et al.</i>, 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 <i>et al.</i>, 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 <i>et al.</i>, 2011).</p> <p>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 19<sup>th</sup> Century whaling records; Townsend, 1935).</p> <p>There are no identified BIAs for this species in the NWMR.</p>
<b>Killer whale</b>	<p>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 <i>et al.</i>, 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</p>

Species	Key Information
	<p>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 <i>et al.</i>, 1996). Killer whales are known to target humpback whales, particularly calves, off Ningaloo Reef during the humpback southern migration season (Pitman <i>et al.</i>, 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.</p>
<b>Australian snubfin dolphin</b>	<p>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 <i>et al.</i>, 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 <i>et al.</i>, 2006; Parra <i>et al.</i>, 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 <i>et al.</i>, 2012). A first comprehensive catalogue of snubfin dolphin sightings has been compiled for the Kimberley, north-west Western Australia (Bouchet <i>et al.</i> 2021) and documented that snubfin dolphins are consistently encountered in shallow water (&lt;21 m depth) close to (&lt;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 <b>Table 7-3</b> and <b>Figure 7-3</b> for the location and type of BIAs for Australian snubfin dolphins in the NWMR.</p>
<b>Indo-Pacific humpback dolphin (Australian humpback dolphin)</b>	<p>Previously included with <i>Sousa chinensis</i>, the Australian humpback dolphin (<i>S. sahalensis</i>) was elevated to a species in 2014. <i>S. chinensis</i> is now applied for humpback dolphins in the eastern Indian and western Pacific Oceans and <i>S. sahalensis</i> 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 <i>S. chinensis</i> under EPBC Act.</p> <p>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 <i>et al.</i>, 2016). Allen <i>et al.</i> (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 <i>et al.</i>, 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 <i>et al.</i>, 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 <i>et al.</i>, 2017).</p> <p>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. &lt;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 <i>et al.</i>, 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 <i>et al.</i>, 2016).</p> <p>Refer <b>Table 7-3</b> and <b>Figure 7-4</b> for the location and type of BIAs for Indo-Pacific humpback dolphins in the NWMR.</p>
<b>Indo-Pacific bottlenose dolphin (Spotted bottlenose dolphin)</b>	<p>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</p>

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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 <b>Table 7-3</b> the location and type of BIAs for spotted bottlenose dolphins in the NWMR.
<b>Sirenians</b>	
<b>Dugong</b>	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 <i>et al.</i> , 2002]); and Eighty Mile Beach and the Kimberley coast, including Roebuck Bay (Brown <i>et al.</i> , 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 <i>et al.</i> , 1997; Preen, 2004). Dugongs are known to migrate between seagrass habitats (hundreds of kilometres) (Sheppard <i>et al.</i> , 2006), and in Shark Bay they exhibit seasonal movements as a behavioural thermoregulatory response to winter water temperatures (Holley <i>et al.</i> , 2006; Marsh <i>et al.</i> , 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 <b>Table 7-3</b> and <b>Figure 7-5</b> for the location and type of BIAs for dugong in the NWMR.
<b>Pinnipeds</b>	
<b>Australian sea lion</b>	<p>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.</p> <p>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.</p> <p>There is no designated habitat critical to survival or identified BIAs for this species in the NWMR. <b>Figure 7-6</b> shows the foraging BIAs for the Australian sea lion to the south of the NWMR.</p>

## 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 <sup>1</sup>	✓	✓	✓	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 <sup>1</sup> <sup>2</sup>	✓	✓	✓	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 <sup>1</sup>	✓	✓	-	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 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 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

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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

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Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
Dugong <sup>1</sup>	✓	✓	✓	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

<sup>1</sup> DSEWPAC (2012a)

<sup>2</sup> Commonwealth of Australia (2015a)

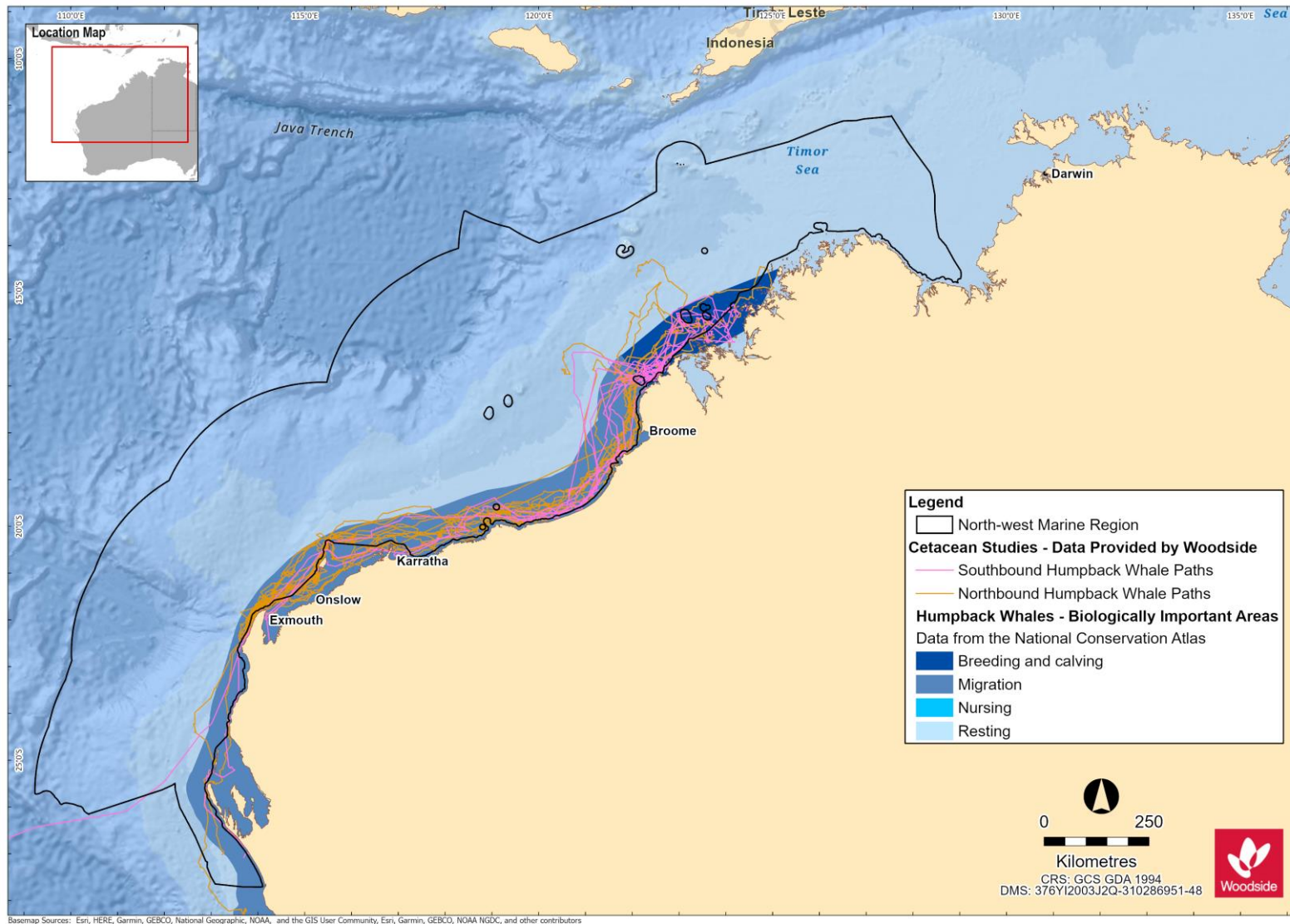


Figure 7-1 Humpback whale BIAs for the NWMR and tagged tracks for north and south bound migrations

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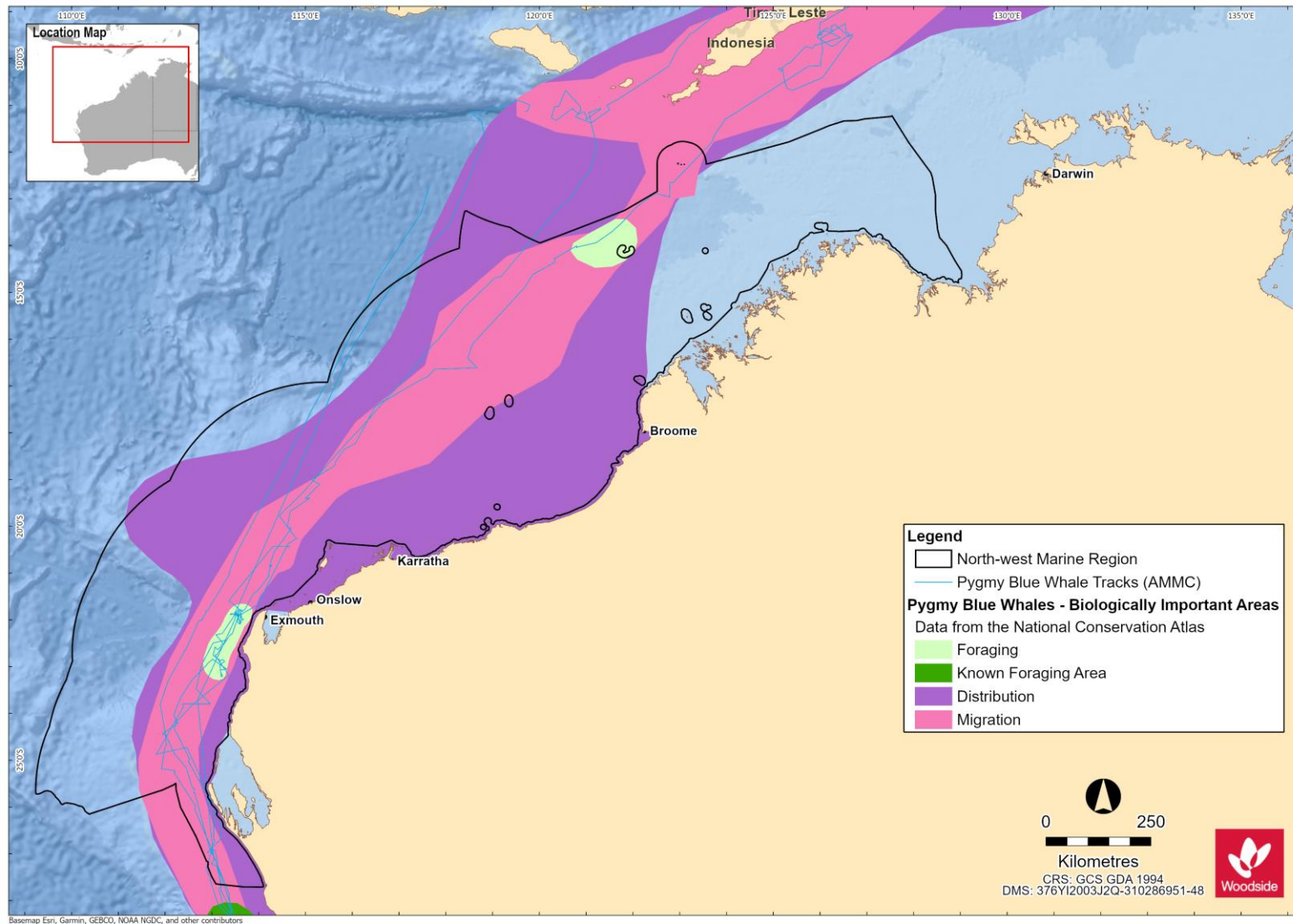


Figure 7-2 Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration

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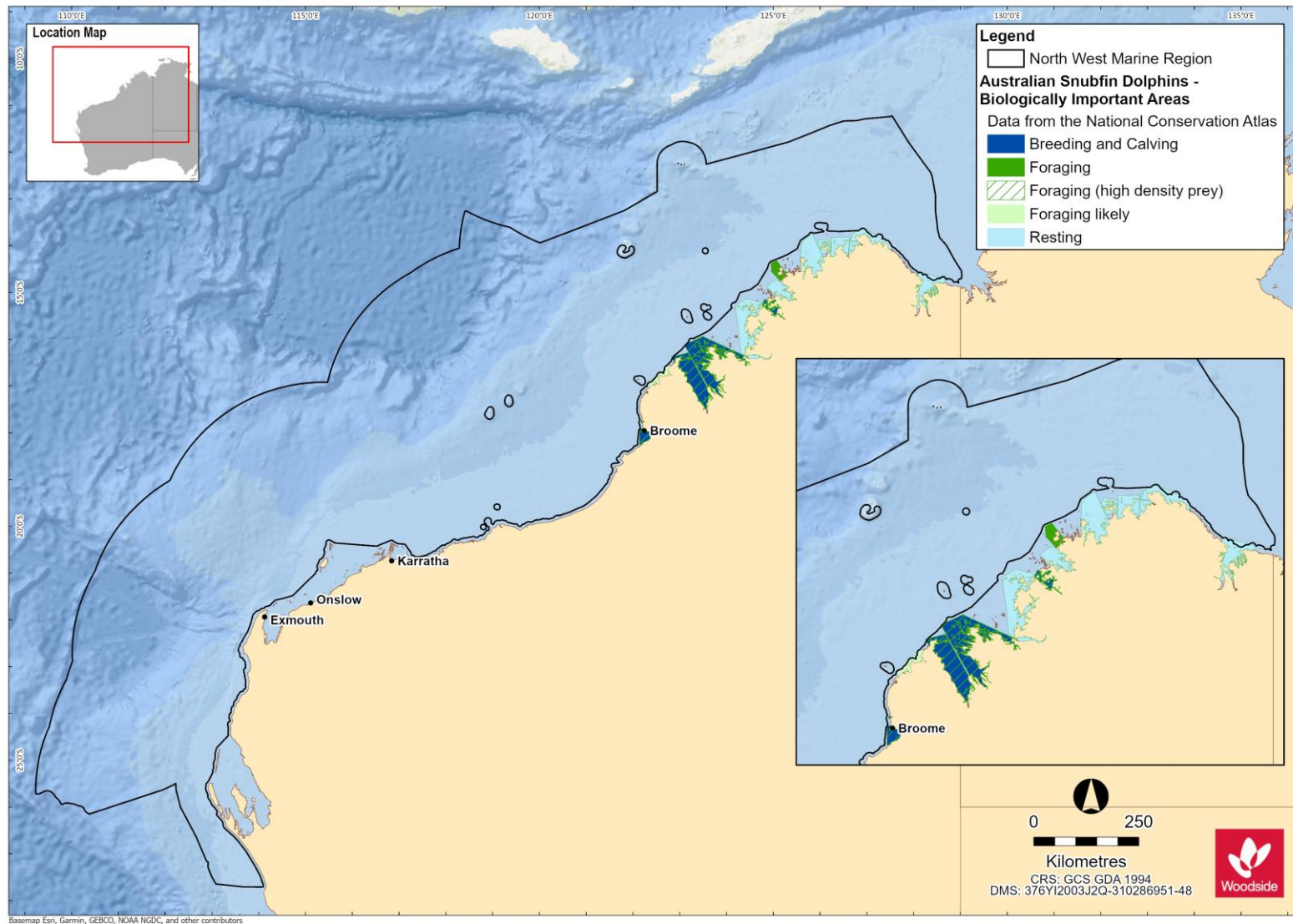


Figure 7-3 Australian snubfin dolphin BIAs for the NWMR

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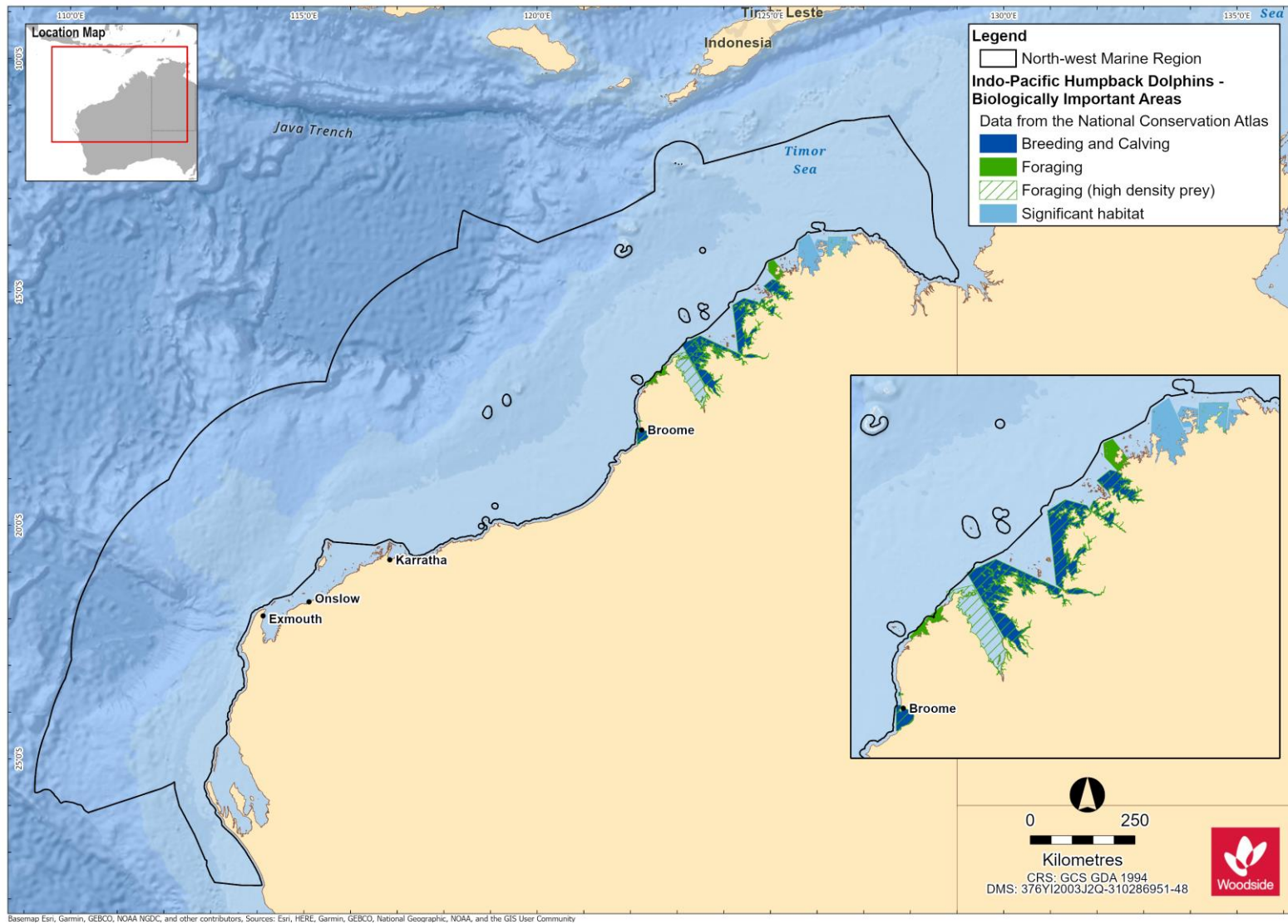


Figure 7-4 Indo-Pacific humpback dolphin BIAs for the NWMR

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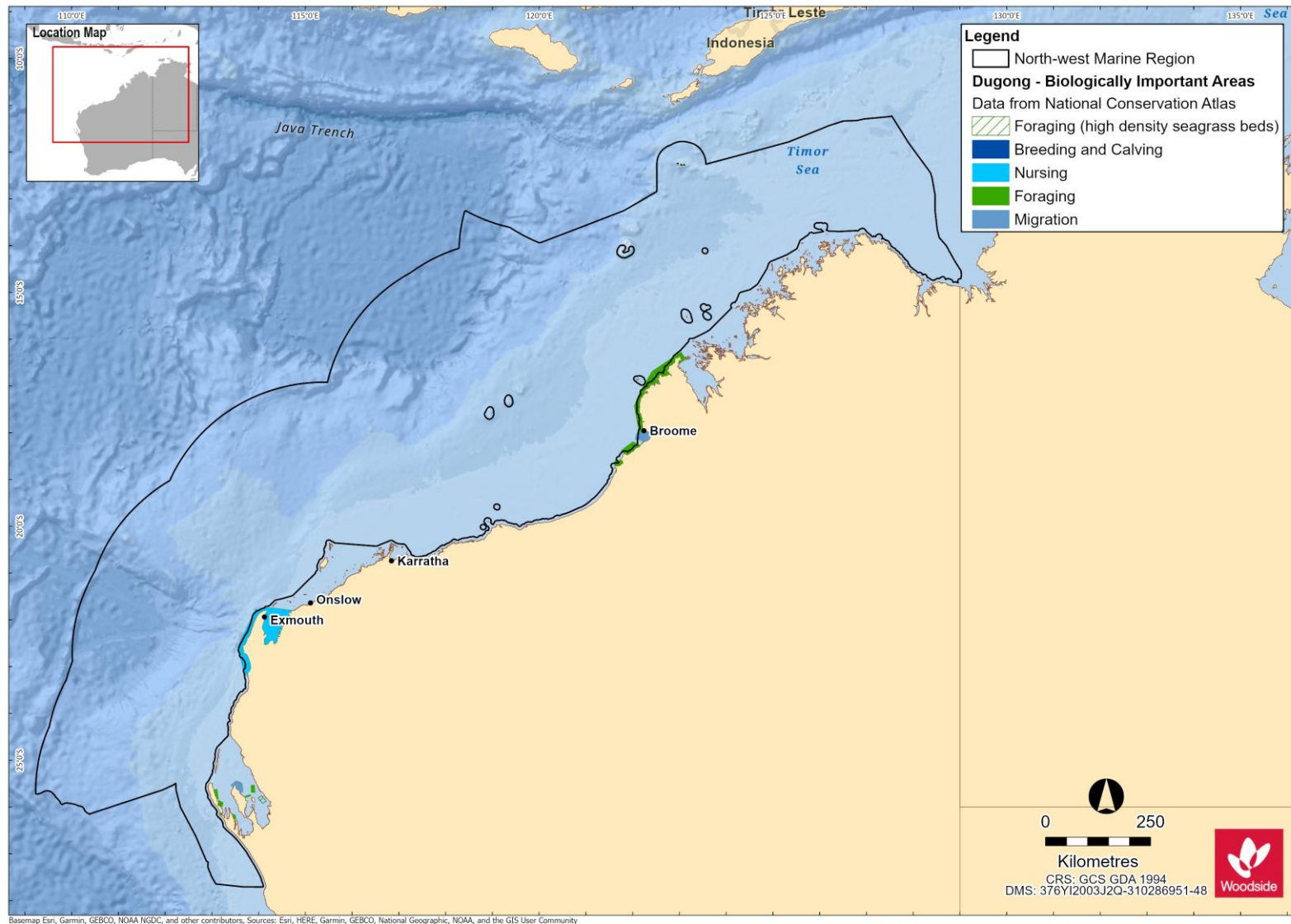
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**Figure 7-5 Dugong BIAs for the NWMR**

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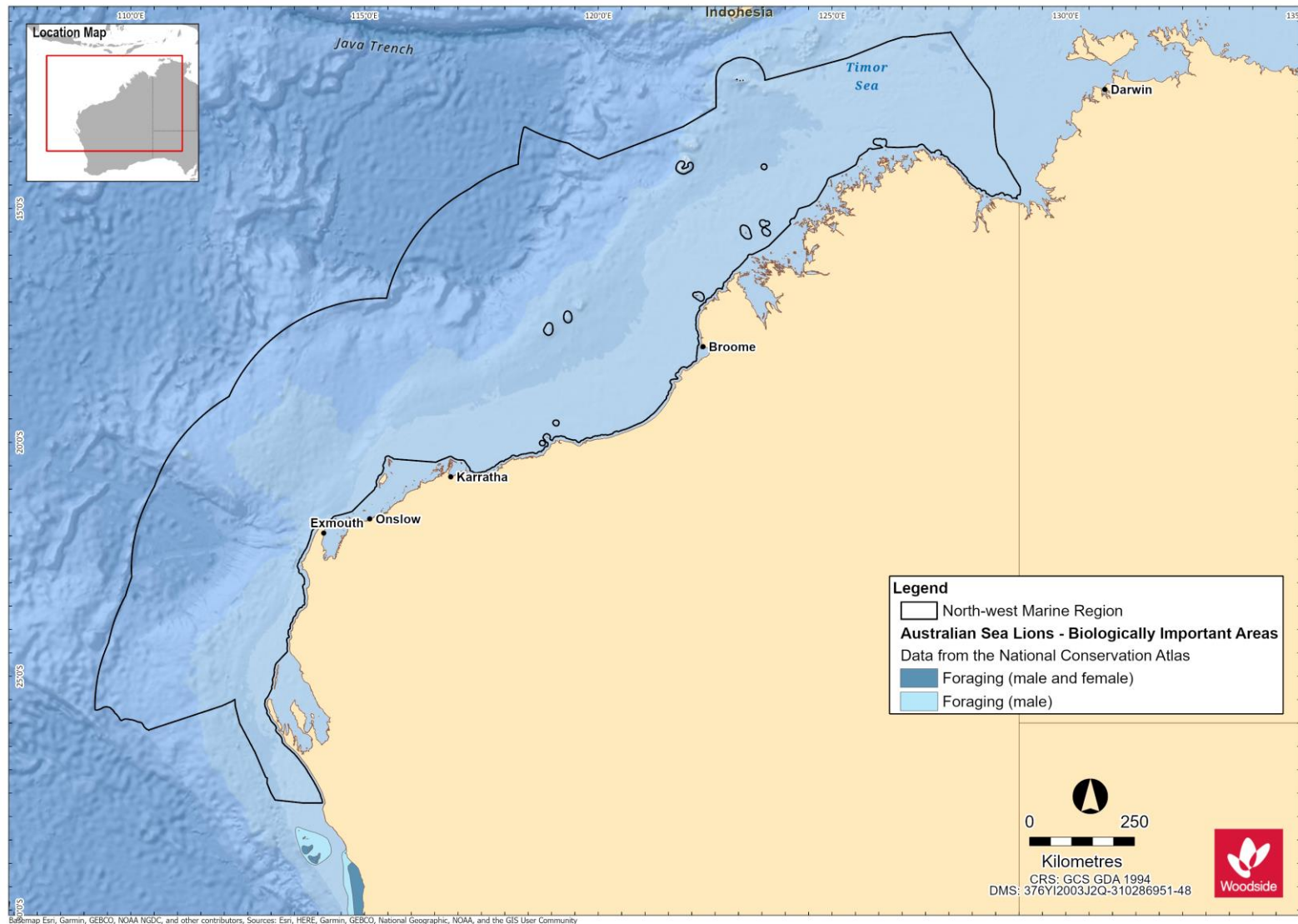


Figure 7-6 Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR

## 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 international significance under the Ramsar Convention. Important Bird Areas (IBAs) for the NWMR, which are also recognised as global Key Biodiversity Areas (KBAs) (BirdLife Australia<sup>4</sup>), 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.](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	
<b>Seabirds</b>						
<i>Macronectes giganteus</i>	Southern giant petrel	Endangered	Migratory	Marine	Migratory	National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC, 2011c)
<i>Papasula abbotti</i>	Abbott's booby	Endangered	N/A	Marine	N/A	Conservation Advice for the Abbott's booby - <i>Papasula abbotti</i> (Threatened Species Scientific Committee, 2020b)
<i>Pterodroma mollis</i>	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Conservation Advice <i>Pterodroma mollis</i> soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
<i>Sternula nereis nereis</i>	Australian fairy tern	Vulnerable	N/A	N/A	Vulnerable	Conservation Advice for <i>Sternula nereis nereis</i> (Fairy Tern) (DSEWPAC, 2011d)
<i>Anous tenuirostris melanops</i>	Australian lesser noddy	Vulnerable	N/A	Marine	Endangered	Conservation Advice <i>Anous tenuirostris melanops</i> Australian lesser noddy (Threatened Species Scientific Committee, 2015e)
<i>Thalassarche carteri</i>	Indian yellow-nosed albatross	Vulnerable	Migratory	Marine	Endangered	National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC, 2011c)
<i>Anous stolidus</i>	Common noddy	N/A	Migratory	Marine	Migratory	Draft Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2019)
<i>Fregata ariel</i>	Lesser frigatebird	N/A	Migratory	Marine	Migratory	
<i>Fregata minor</i>	Great frigatebird	N/A	Migratory	Marine	Migratory	
<i>Sula leucogaster</i>	Brown booby	N/A	Migratory	Marine	Migratory	
<i>Sula sula</i>	Red-footed booby	N/A	Migratory	Marine	Migratory	

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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	
<i>Onychoprion anaethetus</i> (listed as <i>Sterna anaethetus</i> )	Bridled tern	N/A	Migratory	Marine	Migratory	
<i>Thalasseus bergii</i>	Greater crested tern	N/A	Migratory	Marine	Migratory	
<i>Sternula albifrons</i>	Little tern	N/A	Migratory	Marine	Migratory	
<i>Sterna dougallii</i>	Roseate tern	N/A	Migratory	Marine	Migratory	
<i>Onychoprion fuscata</i>	Sooty tern	N/A	N/A	Marine	N/A	
<i>Hydroprogne caspia</i>	Caspian tern	N/A	Migratory	Marine	Migratory	
<i>Ardena pacifica</i>	Wedge-tailed shearwater	N/A	Migratory	Marine	Migratory	
<i>Puffinus assimillis</i>	Little shearwater	N/A	N/A	Marine	N/A	
<i>Ardena carneipes</i>	Flesh-footed shearwater	N/A	Migratory	Marine	Vulnerable	
<i>Calonectris leucomelas</i>	Streaked shearwater	N/A	Migratory	Marine	Migratory	
<i>Phaethon lepturus</i>	White-tailed tropicbird	N/A	Migratory	Marine	Migratory	
<i>Chroicocephalus novaehollandiae</i>	Silver gull	N/A	N/A	Marine	N/A	
<b>Migratory shorebirds</b>						
<i>Numenius madagascariensis</i>	Eastern curlew, Far Eastern curlew	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice <i>Numenius madagascariensis</i> eastern curlew (DOE, 2015a)
<i>Calidris ferruginea</i>	Curlew sandpiper	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice <i>Calidris ferruginea</i> curlew sandpiper (DOE, 2015b)
<i>Calidris tenuirostris</i>	Great knot	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice <i>Calidris tenuirostris</i> Great knot (Threatened Species Scientific Committee, 2016a)
<i>Limosa lapponica menzbieri</i>	Bar-tailed godwit ( <i>menzbieri</i> )	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice <i>Limosa lapponica menzbieri</i> Bar-tailed godwit (northern Siberia). (Threatened Species Scientific Committee, 2016c)

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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	
<i>Calidris canutus</i>	Red knot	Endangered	Migratory	Marine	Endangered	Conservation Advice <i>Calidris canutus</i> Red knot (Threatened Species Scientific Committee, 2016b)
<i>Charadrius mongolus</i>	Lesser sand plover	Endangered	Migratory	Marine	Endangered	Conservation Advice <i>Charadrius mongolus</i> Lesser sand plover (Threatened Species Scientific Committee, 2016e)
<i>Charadrius leschenaultii</i>	Greater sand plover	Vulnerable	Migratory	Marine	Vulnerable	Conservation Advice <i>Charadrius leschenaultia</i> 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
<b>Seabirds</b>	
<b>Southern giant petrel</b>	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.
<b>Abbott's booby</b>	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.
<b>Soft-plumaged petrel</b>	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 extends into subtropical waters and its known distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
<b>Australian fairy tern</b>	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
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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 <b>Table 8-3</b> and <b>Figure 8-2</b> .
<b>Australian lesser noddy</b>	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 <i>et al.</i> , 2018). No BIAs for this species are located in the NWMR.
<b>Indian yellow-nosed albatross</b>	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.
<b>Common noddy</b>	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 <i>et al.</i> 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.
<b>Lesser frigatebird Great frigatebird</b>	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 <b>Table 8-3</b> .
<b>Brown booby</b>	The brown booby is the most common booby, occurring throughout all tropical oceans bounded by latitudes 30° N and 30° 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 <b>Table 8-3</b> and <b>Figure 8-3</b> .
<b>Red-footed booby</b>	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 <b>Table 8-3</b> and <b>Figure 8-3</b> .
<b>Greater crested tern</b>	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.
<b>Little tern</b>	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 <b>Table 8-3</b> and <b>Figure 8-2</b> .
<b>Roseate tern</b>	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 <b>Table 8-3</b> and <b>Figure 8-2</b> .
<b>Wedge-tailed shearwater</b>	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 <i>et al.</i> , 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 <i>et al.</i> , 2018). Cannell <i>et al.</i> (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 <i>et al.</i> (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 <b>Table 8-3</b> and <b>Figure 8-1</b> .
<b>Flesh-footed shearwater</b>	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.
<b>Streaked shearwater</b>	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.
<b>White-tailed tropicbird</b>	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 <b>Table 8-3</b> .
<b>Silver gull</b>	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

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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	

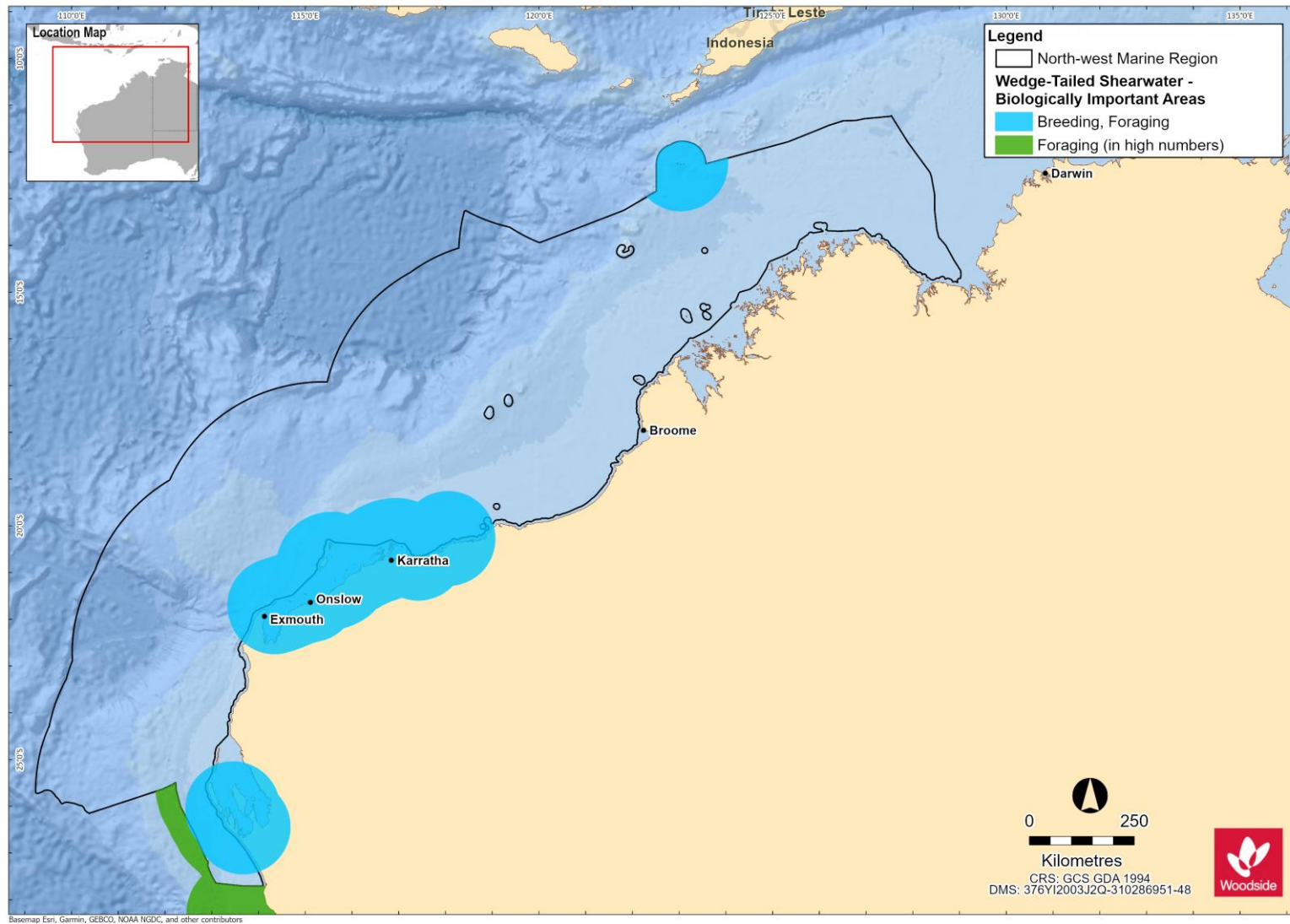


Figure 8-1 Wedge-tailed shearwater BIAs for the NWMR

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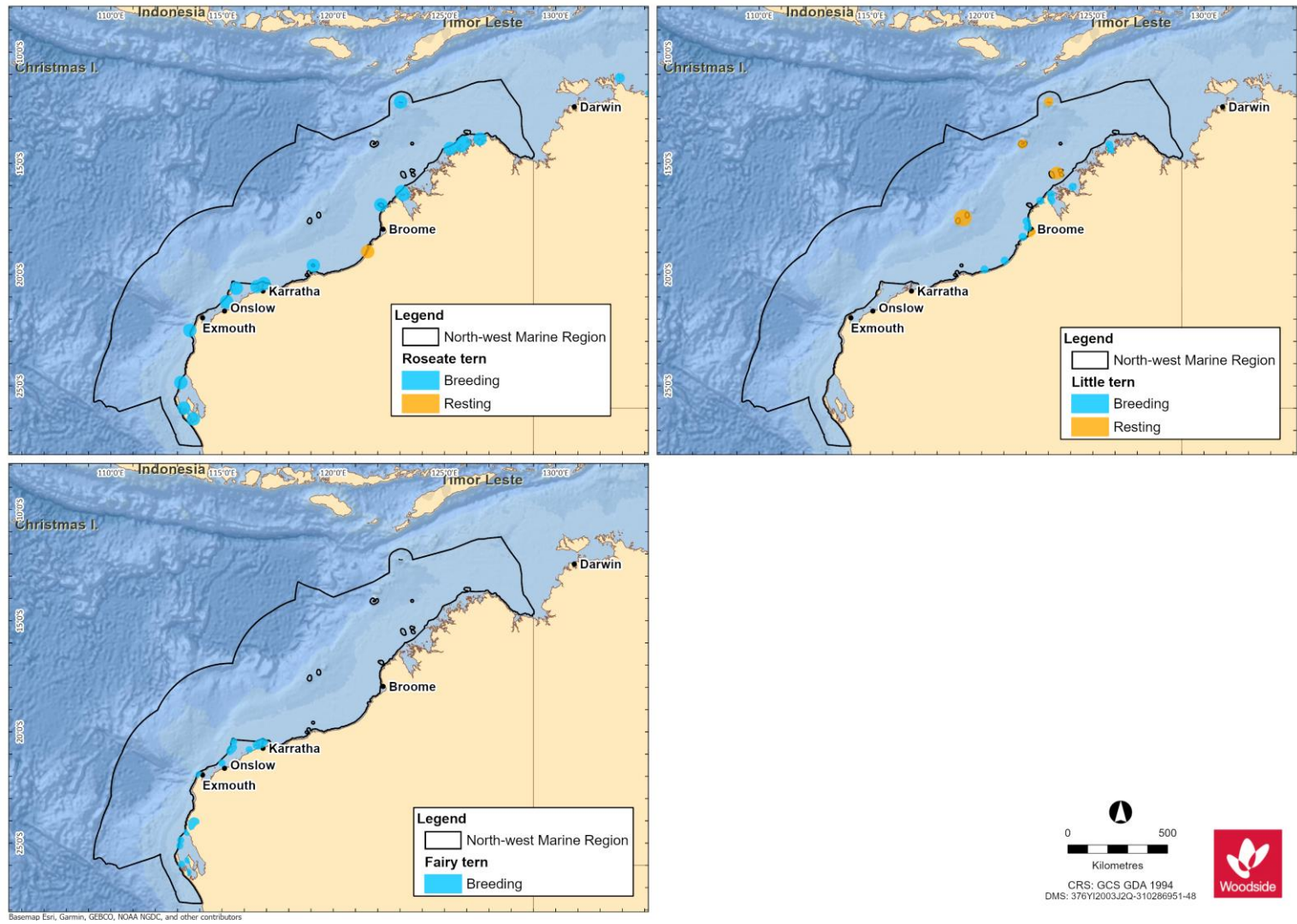


Figure 8-2 Tern species BIAs for the NWMR

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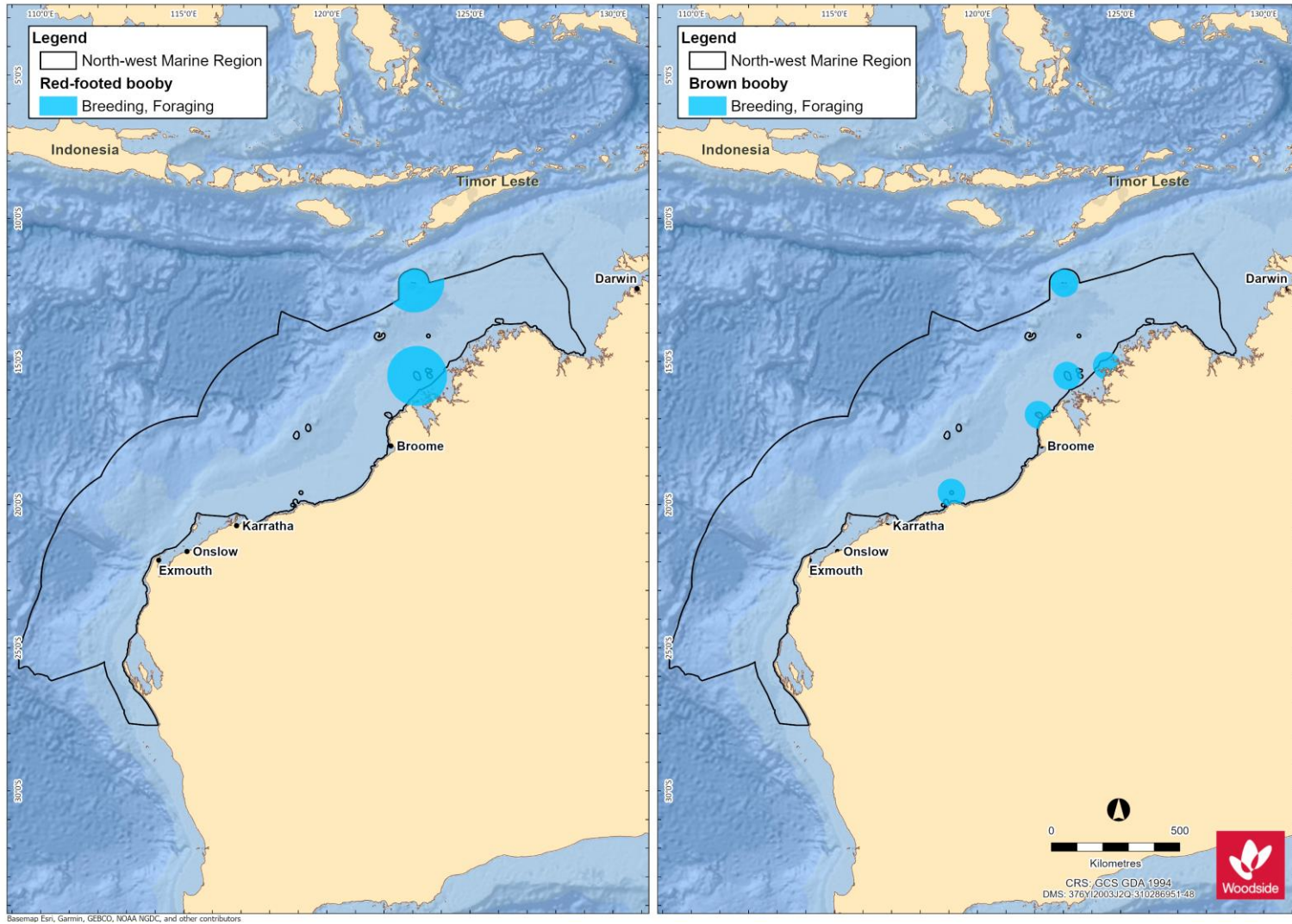


Figure 8-3 Red-footed and brown booby BIAs for the NWMR

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## 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
<b>Shorebirds</b>	
<b>Eastern curlew, Far eastern curlew</b>	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).
<b>Curlew sandpiper</b>	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 <i>et al.</i> , 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).
<b>Great knot</b>	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).
<b>Bar-tailed godwit (<i>menzbieri</i>)</b>	The bar-tailed godwit is a large, migratory shorebird and there are two sub-species in the EAAF ( <i>Limosa lapponica baueri</i> and <i>L. l. menzbieri</i> ). The sub-species <i>L. l. menzbieri</i> 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 ( <i>menzbieri</i> ) 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).
<b>Red knot (<i>piersmai</i>)</b>	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, <i>Calidris canutus piersmai</i> 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).
<b>Lesser sand plover</b>	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 <i>Charadrius m. mongolus</i> 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).
<b>Greater sand plover</b>	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

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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 NWMM

KEF Name	Woodside Activity Area			Values <sup>1</sup>	Description
	Browse	NWS/S	NW Cape		
<b>Carbonate bank and terrace system of the Sahul Shelf</b>	✓	-	-	<p>Unique seafloor feature with ecological properties of regional significance</p> <p>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</p>	<p>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.</p> <p>The bank and terrace system of the Van Diemen Rise covers approximately 31,278 km<sup>2</sup> 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 <i>et al.</i>, 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)</p>
<b>Pinnacles of the Bonaparte Basin</b>	✓	-	-	<p>Unique seafloor feature with ecological properties of regional significance</p> <p>Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species</p> <p>Recognised as a biodiversity hotspot for sponges</p> <p>The Pinnacles of the Bonaparte Basin KEF is located within both the NWMM and NMR (refer <b>Table 9-3</b>)</p>	<p>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 &gt;520 km<sup>2</sup> 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).</p>
<b>Ashmore Reef and Cartier Island and surrounding Commonwealth waters</b>	✓	-	-	<p>High productivity, biodiversity and aggregation of marine life that apply to both the benthic and pelagic habitats within the feature</p>	<p>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</p>

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KEF Name	Woodside Activity Area			Values <sup>1</sup>	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 km <sup>2</sup> . 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.
<b>Seringapatam Reef and the Commonwealth waters in the Scott Reef complex</b>	✓	-	-	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).
<b>Continental slope demersal fish communities</b>	✓	✓	✓	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 <i>et al.</i> , 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 <i>et al.</i> , 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 <i>et al.</i> , 2007). Higher-order consumers may include carnivorous fishes, deepwater sharks, large squid, and toothed whales (Brewer <i>et al.</i> , 2007). Pelagic production is phytoplankton-based, with hot spots around oceanic reefs and islands (Brewer <i>et al.</i> , 2007).

KEF Name	Woodside Activity Area			Values <sup>1</sup>	Description
	Browse	NWS/S	NW Cape		
<b>Ancient coastline at 125 m depth contour</b>	✓	✓	✓	<p>Unique seafloor feature with ecological properties of regional significance</p> <p>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</p>	<p>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.</p> <p>The Ancient Coastline is not continuous throughout the NWMR and coincides with a well-documented eustatic stillstand at about 130 m worldwide (Falkner <i>et al.</i>, 2009).</p> <p>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 <i>et al.</i>, 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.</p> <p>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 <i>et al.</i>, 2009)</p>
<b>Canyons linking the Argo Abyssal Plain and Scott Plateau</b>	-	✓	-	<p>Facilitates nutrient upwelling, creating enhanced productivity and encouraging diverse aggregations of marine life</p>	<p>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 <i>et al.</i>, 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 <i>et al.</i>, 2007).</p>
<b>Glomar Shoal</b>	-	✓	-	<p>An area of high productivity and aggregations of marine life including commercial and recreational fish species</p>	<p>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 <i>et al.</i>, 2009). Studies by Abdul Wahab <i>et al.</i> (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 <i>et al.</i>, 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 <i>et al.</i>, 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.</p>

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KEF Name	Woodside Activity Area			Values <sup>1</sup>	Description
	Browse	NWS/S	NW Cape		
<b>Mermaid Reef and Commonwealth waters surrounding Rowley Shoals</b>	-	✓	-	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 <b>Section 10</b> . 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 <i>et al.</i> , 1994).
<b>Exmouth Plateau</b>	-	✓	✓	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 <i>et al.</i> , 2007). Satellite observations suggest that productivity is enhanced along the northern and southern boundaries of the plateau (Brewer <i>et al.</i> , 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 <i>et al.</i> , 2007). Protected and migratory species are also known to pass through the region, including whale sharks and cetaceans.
<b>Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula</b>	-	-	✓	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 <sup>1</sup>	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	
<b>Commonwealth waters adjacent to Ningaloo Reef</b>	-	-	✓	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 <b>Section 10</b> .
<b>Wallaby Saddle</b>	-	-	✓	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 <i>et al.</i> 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).

<sup>1</sup>: 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.



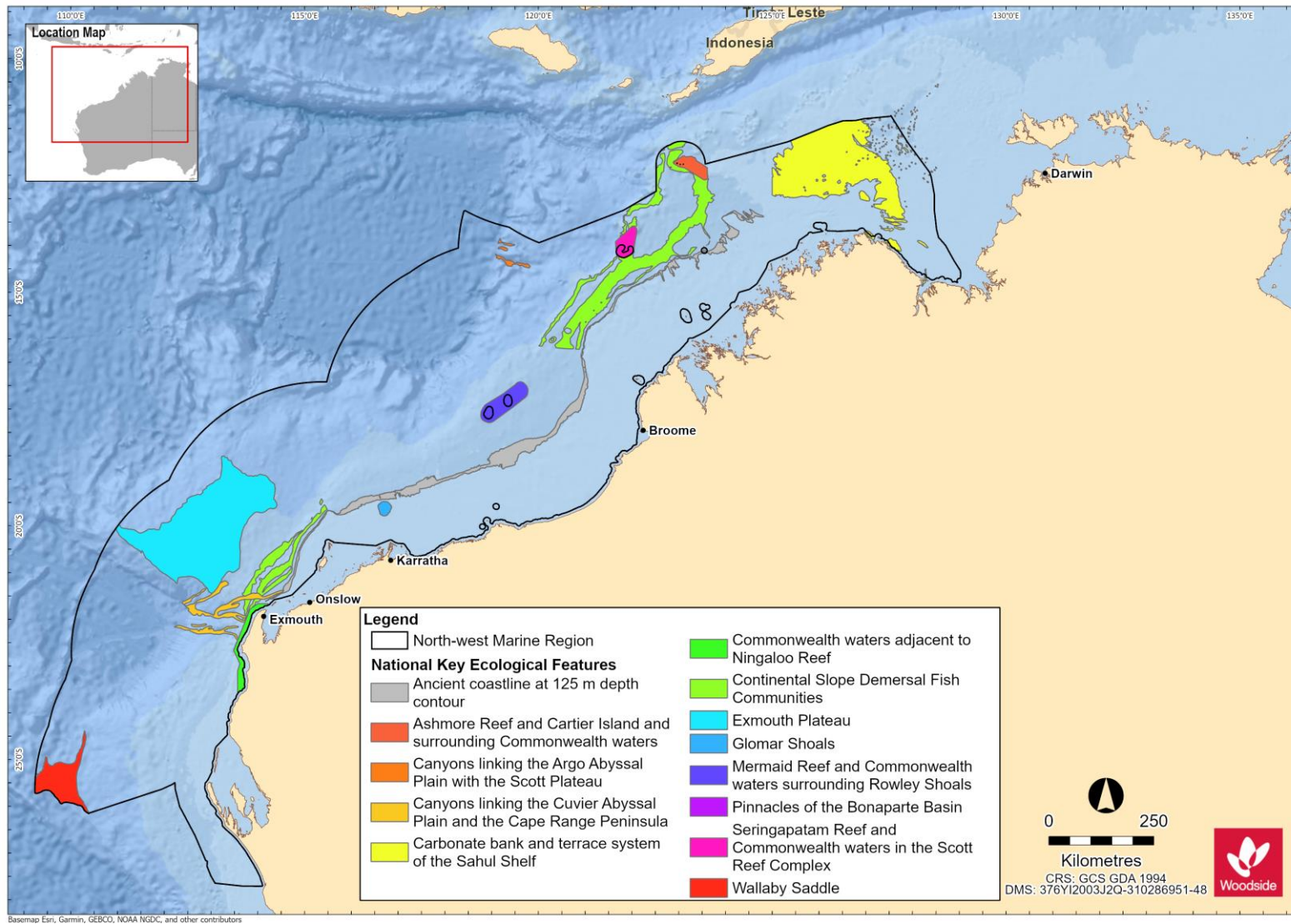


Figure 9-1 Key Ecological Features (KEFs) within the NWMR.

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Table 9-2 Key Ecological Features (KEF) within the SWMR

KEF Name	Values <sup>1</sup>	Description
<b>Albany Canyons group and adjacent shelf break</b>	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 roughly aggregations. Anecdotal evidence also indicates that this area supports fish aggregations that attract large predatory fish and sharks.
<b>Ancient coastline at 90-120 m depth</b>	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.
<b>Cape Mentelle upwelling</b>	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.
<b>Commonwealth marine environment surrounding the Houtman Abrolhos Islands (and adjacent shelf break)</b>	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 <sup>1</sup>	Description
<b>Commonwealth marine environment surrounding the Recherche Archipelago</b>	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.
<b>Commonwealth marine environment within and adjacent to the west-coast inshore lagoons</b>	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.
<b>Commonwealth marine environment within and adjacent to Geographe Bay</b>	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 <i>et al.</i> , 2007). It is also an important resting area for migratory humpback whales.
<b>Diamantina Fracture Zone</b>	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.
<b>Naturaliste Plateau</b>	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.
<b>Perth Canyon and adjacent shelf break, and other west-coast canyons</b>	An area of higher productivity that attracts feeding aggregations of deep-diving mammals and large predatory fish. It is also recognised as a unique seafloor feature with ecological properties of regional significance	The Perth Canyon is the largest known undersea canyon in Australian waters. Deep ocean currents rise to the surface, creating a nutrient-rich cold- water habitat attracting feeding aggregations of deep-diving mammals, such as pygmy blue whales and large predatory fish that feed on aggregations of small fish, krill and squid.

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KEF Name	Values <sup>1</sup>	Description
<b>Western demersal slope and associated fish communities of the Central Western Province</b>	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.
<b>Western rock lobster</b>	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.

<sup>1</sup>. 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



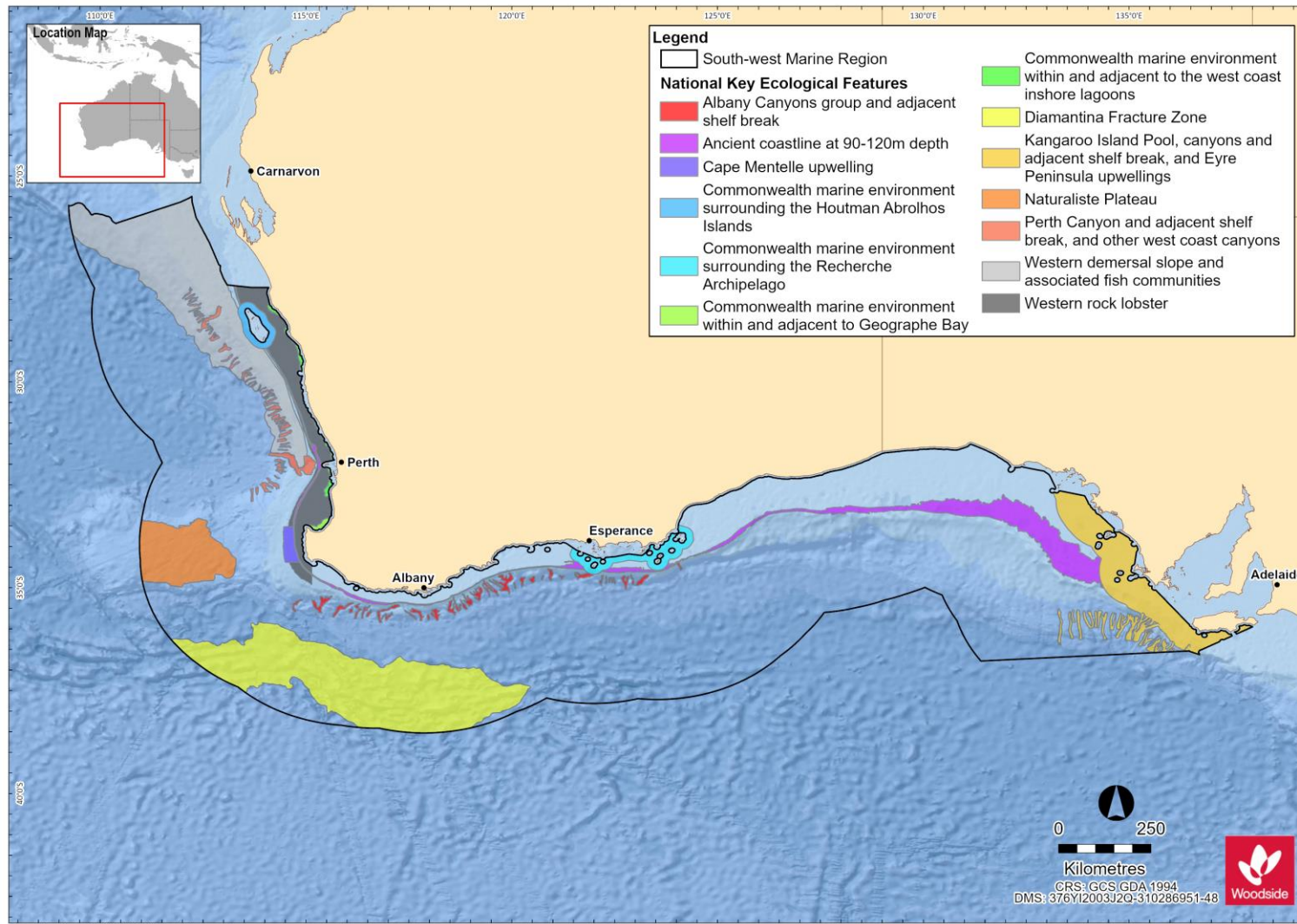


Figure 9-2. Key Ecological Features (KEFs) within the SWMR

Table 9-3 Key Ecological Features (KEF) within the NMR

KEF Name	Values <sup>1</sup>	Description
<b>Carbonate bank and terrace system of the Van Diemen Rise</b>	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 <i>et al.</i> 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.
<b>Gulf of Carpentaria basin</b>	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.
<b>Gulf of Carpentaria coastal zone</b>	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.
<b>Pinnacles of the Bonaparte Basin</b>	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 <b>Table 9-1</b> )	Covering more than 520 km <sup>2</sup> 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 <sup>1</sup>	Description
<b>Plateaux and saddle north-west of the Wellesley Islands</b>	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.
<b>Shelf break and slope of the Arafura Shelf</b>	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 <i>et al.</i> , 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.
<b>Submerged coral reefs of the Gulf of Carpentaria</b>	High aggregations of marine life, biodiversity and endemism Twenty per cent of the reefs found in the NMR are situated within this KEF (Harris <i>et al.</i> , 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.
<b>Tributary Canyons of the Arafura Depression</b>	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.

<sup>1</sup>. 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*.

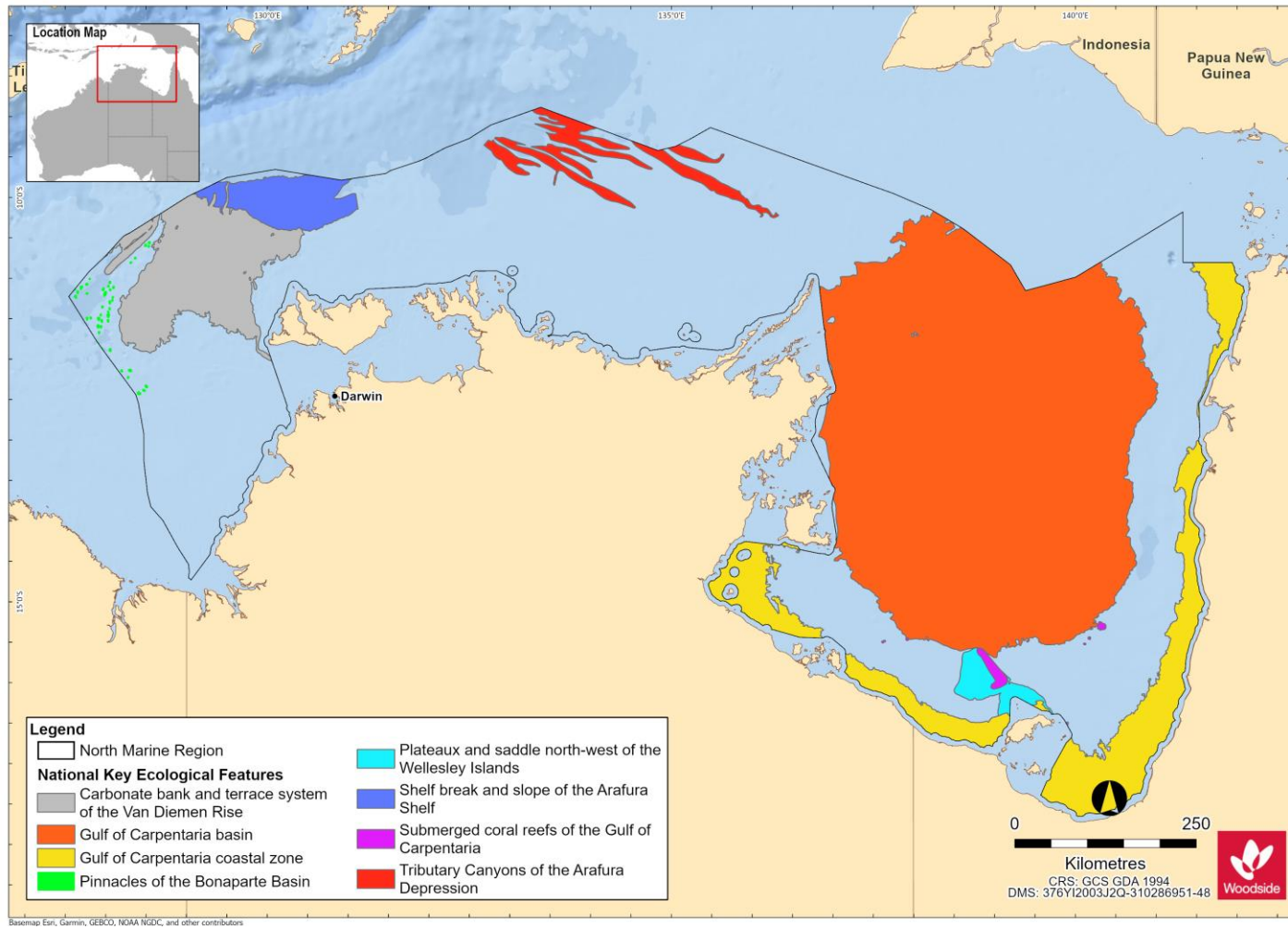


Figure 9-3. Key Ecological Features (KEFs) within the NMR

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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			
<b>World Heritage Properties</b>						
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.
<b>National Heritage Places - Natural</b>						
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.

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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 <sup>2</sup> 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.
<b>Commonwealth Heritage Places - Natural</b>						
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).
<b>Wetlands of International Importance (Ramsar)</b>						
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 <sup>2</sup> , 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.

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					km <sup>2</sup> , 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.
<b>Wetlands of National Importance (DAWE, 2019)</b>						
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 <sup>2</sup> 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 <sup>2</sup> , 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.

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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 <sup>2</sup> 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 <sup>2</sup> 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.
<b>Australian Marine Parks (DNP, 2018a)</b>						
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:

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					<p>area of 88,060 km<sup>2</sup> extending from the WA State waters boundary to the edge of Australia's EEZ.</p> <p>The Abrolhos Marine Park is located within both the NWMR and SWMR.</p>	<ul style="list-style-type: none"> <li>• Central Western Province</li> <li>• Central Western Shelf Province</li> <li>• Central Western Transition</li> <li>• South-west Shelf Transition</li> </ul> <p>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.</p> <p>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.</p>
Carnarvon Canyon Marine Park	-	-	✓	IV	Carnarvon Canyon Marine Park covers an area of 6177 km <sup>2</sup> , 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 <sup>2</sup> 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: <ul style="list-style-type: none"> <li>• Central Western Shelf Province</li> <li>• Central Western Transition.</li> </ul> The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under

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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, interesting 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 <sup>2</sup> , 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: <ul style="list-style-type: none"> <li>• Central Western Shelf Transition</li> <li>• Central Western Transition</li> <li>• Northwest Province.</li> </ul> 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, interesting 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 <sup>2</sup> , 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: <ul style="list-style-type: none"> <li>• Central Western Shelf Transition</li> <li>• Central Western Transition</li> <li>• Northwest Province</li> <li>• Northwest Shelf Province.</li> </ul> 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

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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, interesting 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 <sup>2</sup> , 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, interesting, 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 <sup>2</sup> , 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, interesting 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 <sup>2</sup> , 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.

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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, interesting 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 <sup>2</sup> , 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: <ul style="list-style-type: none"> <li>• Northwest Transition</li> <li>• Timor Province.</li> </ul> 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 <sup>2</sup> , 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.

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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 <sup>2</sup> , 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 <sup>2</sup> , 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: <ul style="list-style-type: none"> <li>• Northwest Shelf Province</li> <li>• Northwest Shelf Transition</li> <li>• Timor Province.</li> </ul> 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 <sup>2</sup> , 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:

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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 <sup>2</sup> , 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 <sup>2</sup> 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 <sup>2</sup> 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 interesting habitat for marine turtles.
<b>State Marine Parks and Reserves</b>						
North Kimberley Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	The North Kimberley Marine Park covers approx. 18,450 km <sup>2</sup> 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 <sup>2</sup> 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

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Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					km <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> , 42 km <sup>2</sup> and 1,147 km <sup>2</sup> , 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 <sup>2</sup> and 286 km <sup>2</sup> , 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).

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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 <sup>2</sup> and 1270 km <sup>2</sup> , respectively.	Seagrass covers over 4000 km <sup>2</sup> 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)

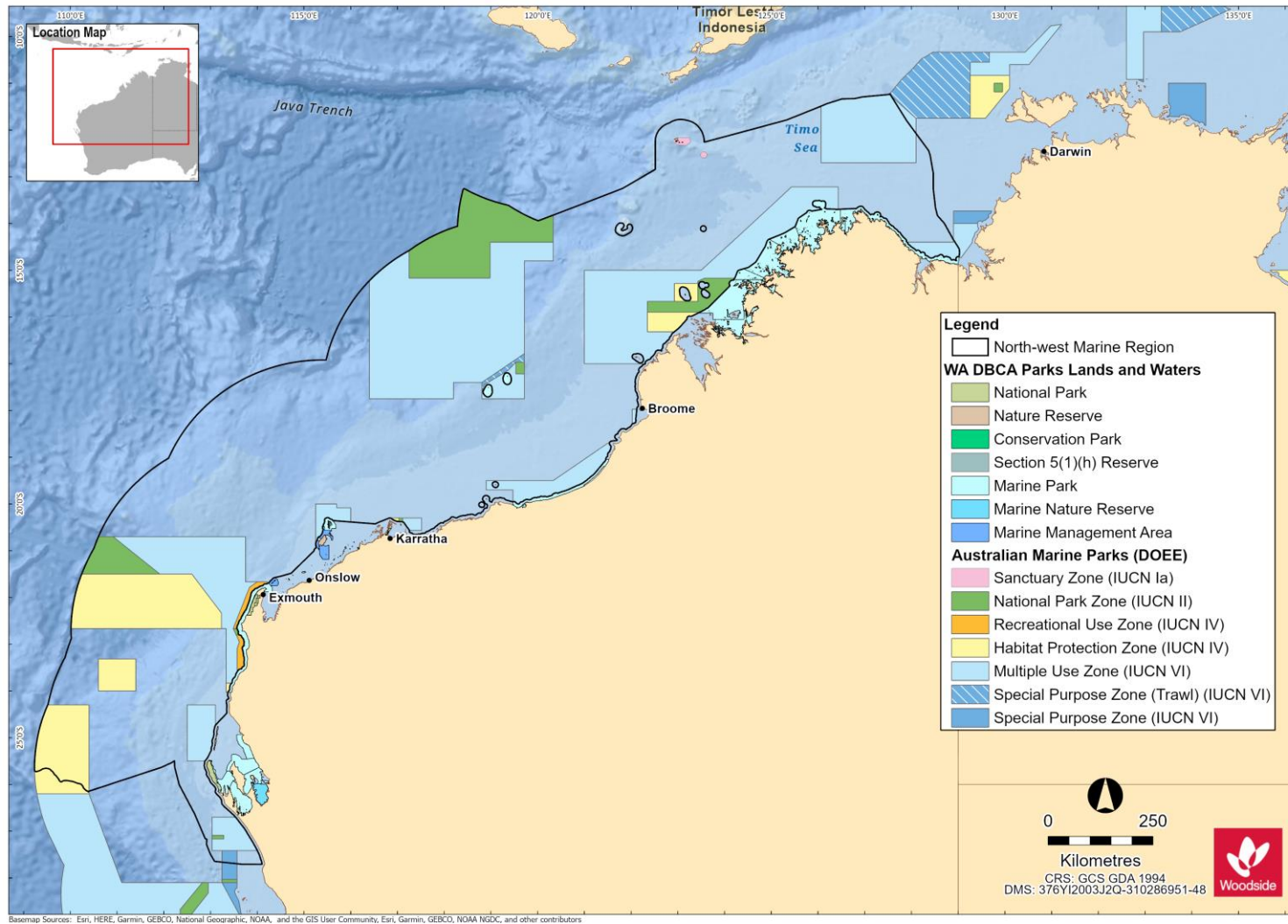


Figure 10-1 Commonwealth and State Marine Protected Areas for the NWMR

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## 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
<b>World Heritage Properties</b>			
N/A			
<b>National Heritage Places - Natural</b>			
N/A			
<b>Commonwealth Heritage Places - Natural</b>			
N/A			
<b>Wetlands of International Importance (Ramsar)</b>			
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 <sup>2</sup> . The site was listed under the Ramsar Convention in 2001.	The wetlands support sedgeland, herbland, grassland, open-shrubland and low open-forest. 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

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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.
<b>Wetlands of National Importance (DAWE, 2019)</b>			
Rottneest Island Lakes		The Rottneest Island Lakes site is the cluster of 18 lakes and swamps on the north-east part of Rottneest 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.
<b>Australian Marine Parks (DNP, 2018b)</b>			
Abrolhos Marine Park	II, IV, VI	The Abrolhos Marine Park is located within both the NWMR and SWMR. Refer <b>Table 10-1</b> for description and conservation values.	
Bremer Marine Park	II, VI	Bremer Marine Park covers an area of 4472 km <sup>2</sup> 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: <ul style="list-style-type: none"> <li>• Southern Province</li> <li>• South-west Shelf Province.</li> </ul> It includes two KEFs: Albany Canyon group and adjacent shelf break; and Ancient coastline at 90-120 m depth.

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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 <sup>2</sup> 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: <ul style="list-style-type: none"> <li>• South-west Shelf Province</li> <li>• Southern Province</li> <li>• Great Australian Bight Shelf Transition.</li> </ul> It includes three KEFs: Mesoscale eddies; Ancient coastline at 90-120 m depth; and Commonwealth marine environment surrounding the Recherche Archipelago. <p>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.</p>
Geographe Marine Park	II, IV, VI	Geographe Marine Park covers an area of 977 km <sup>2</sup> 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. <p>It includes two KEFs: Commonwealth marine environment within and adjacent to Geographe Bay; and Western rock lobster.</p> <p>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.</p>
Great Australian Bight Marine Park	II, VI	Great Australian Bight Marine Park covers an area of 45,822 km <sup>2</sup> 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: <ul style="list-style-type: none"> <li>• Great Australian Bight Shelf Transition</li> <li>• Southern Province.</li> </ul> <p>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.</p> <p>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</p>

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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 <sup>2</sup> and is located ~148 km north of Perth and 155 km south of Geraldton, adjacent to the WA Jurien Bay Marine Park.	<p>Jurien Marine Park is significant because it includes habitats, species and ecological communities associated with two bioregions:</p> <ul style="list-style-type: none"> <li>• South-west Shelf Transition</li> <li>• Central Western Province.</li> </ul> <p>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</p> <p>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.</p>
Perth Canyon Marine Park	II, IV, VI	Perth Canyon Marine Park covers an area of 7409 km <sup>2</sup> and is located ~52 km west of Perth and ~19 km west of Rottnest Island.	<p>Perth Canyon Marine Park is significant because it includes habitats, species and ecological communities associated with four bioregions:</p> <ul style="list-style-type: none"> <li>• Central Western Province</li> <li>• South-west Shelf Province</li> <li>• Southwest Transition</li> <li>• South-west Shelf Transition.</li> </ul> <p>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.</p> <p>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.</p>
South-west Corner Marine Park	II, IV, VI	South-west Corner Marine Park covers an area of 271,833 km <sup>2</sup> 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.	<p>South-west Corner Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions:</p> <ul style="list-style-type: none"> <li>• Southern Province</li> <li>• South-west Transition</li> <li>• South-west Shelf Province.</li> </ul> <p>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.</p>

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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 <sup>2</sup> 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 <sup>2</sup> 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.
<b>State Marine Parks and Reserves</b>			
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 <sup>2</sup> .	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 <sup>2</sup> . 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

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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 <sup>2</sup> .	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 Marine 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 <sup>2</sup> .	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 ( <i>Eudyptula minor</i> ) 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 <sup>2</sup> .	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 <sup>2</sup> .	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

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*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)

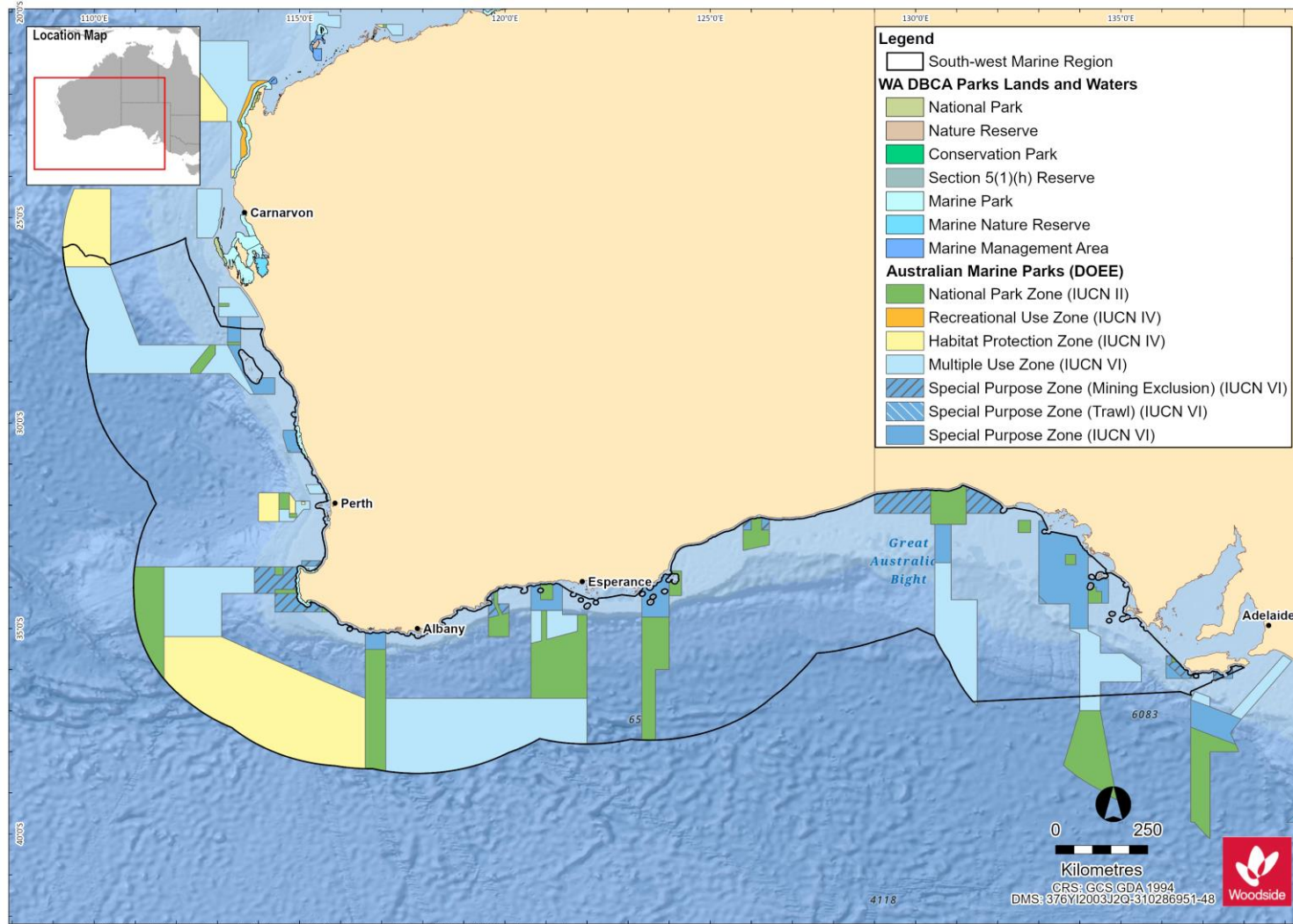


Figure 10-2. Commonwealth and State Marine Protected Areas for the SWMR

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## 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
<b>World Heritage Properties</b>			
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.
<b>National Heritage Places - Natural</b>			
Kakadu National Park		Refer to World Heritage property description above.	Refer to World Heritage property conservation values above
<b>Commonwealth Heritage Places - Natural</b>			
N/A			
<b>Wetlands of International Importance (Ramsar)</b>			
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.
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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.
<b>Wetlands of National Importance (DAWE, 2019)</b>			
Southern Gulf Aggregation		The site is a complex continuous wetland aggregation in the Gulf of Carpentaria, covering an area of ~5460 km <sup>2</sup> 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.
<b>Australian Marine Parks (DNP, 2018c)</b>			
Arafura Marine Park	VI	Arafura Marine Park covers an area of 22,924 km <sup>2</sup> 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: <ul style="list-style-type: none"> <li>•Northern Shelf Province</li> <li>•Timor Transition.</li> </ul> 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 interesting 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 <sup>2</sup> 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 <sup>2</sup> 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.

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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 interesting 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 <b>Table 10-1</b> for description and conservation values.	
Limmen Marine Park	IV	Limmen Marine Park covers an area of 1399 km <sup>2</sup> 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 interesting 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 <b>Table 10-1</b> for description and conservation values.	
Wessel Marine Park	IV, VI	Wessel Marine Park covers an area of 5908 km <sup>2</sup> 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 interesting 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 <sup>2</sup> 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

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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.	<ul style="list-style-type: none"> <li>Northern Shelf Province.</li> </ul> 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.
<b>Territory Marine Parks and Reserves</b>			
Cobourg Marine Park	II, IV, VI	Cobourg Marine Park covers an area of 2,290 km <sup>2</sup> 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)



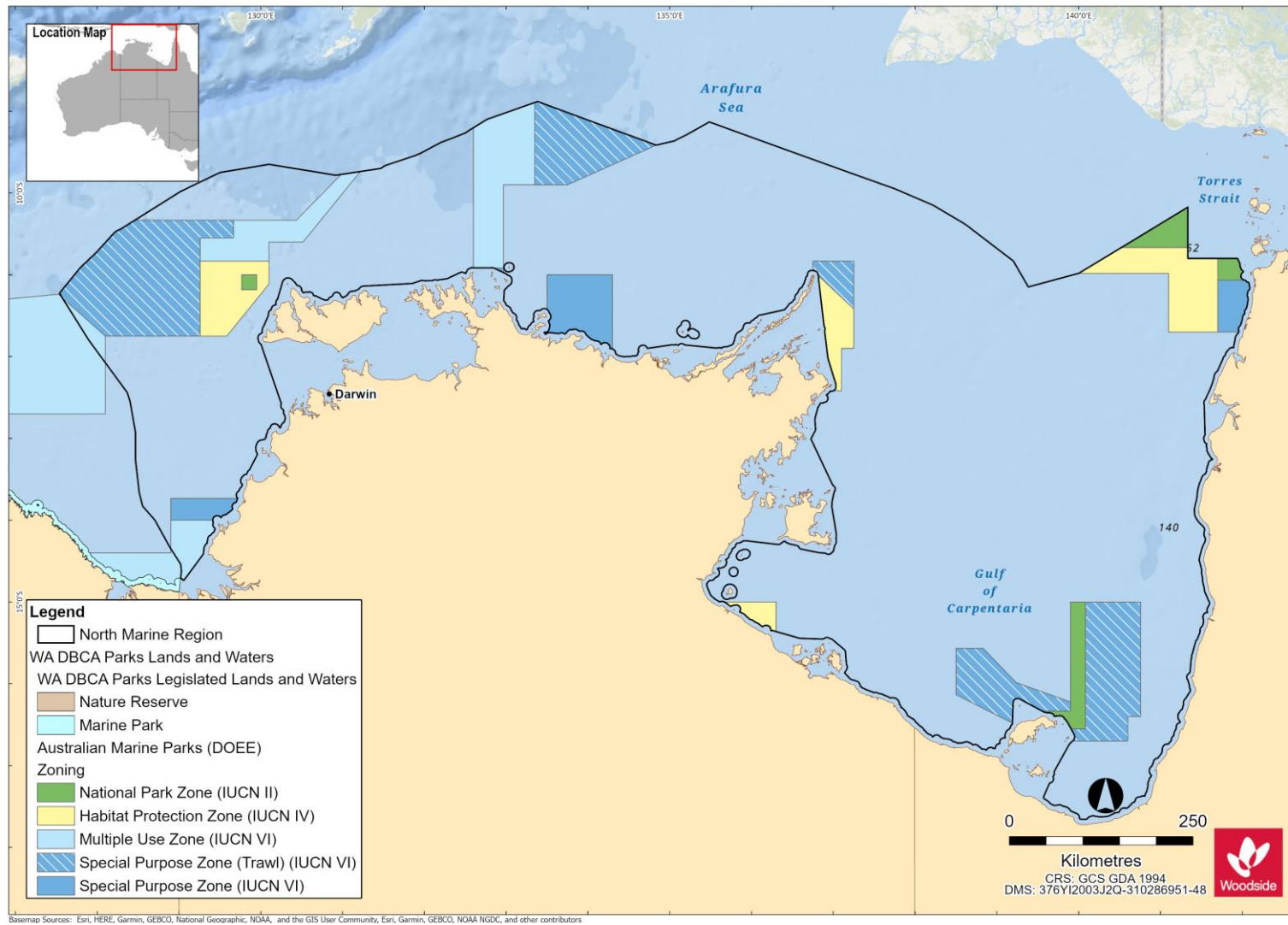


Figure 10-3. Commonwealth and State Marine Protected Areas within the NMR



## 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			
<b>National Heritage Properties</b>						
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.
<b>Commonwealth Heritage Properties</b>						
N/A						

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### 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
<b>National Heritage Properties</b>			
None			
<b>Commonwealth Heritage Properties</b>			
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
<b>National Heritage Properties</b>			
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 <i>Macrozamia riedlei</i> 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.
<b>Commonwealth Heritage Properties</b>			
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

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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			
<b>Commonwealth Managed Fisheries</b>						
<b>Southern Bluefin Tuna Fishery</b>	✓	✓	✓	<b>Management area</b>	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.	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>
				Southern bluefin tuna ( <i>Thunnus maccoyii</i> )	Longline and purse seine fishing.	Southern bluefin tuna is a pelagic species which can be found to depths of 500 m (AFMA, 2021a)
				<b>Fishing effort</b>	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 <i>et al.</i> , 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.	
<b>Active licences/vessels</b>	Seven purse seine vessels, 20 longline vessels (Patterson <i>et al.</i> , 2020).					
<b>Western Skipjack Tuna Fishery</b>	✓	✓	✓	<b>Management area</b>	The combined western and eastern skipjack tuna ( <i>Katsuwonus pelamis</i> ) 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.	

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Fishery	Woodside Activity Area			Description														
	Browse	NWS/S	NW Cape															
				<table border="1"> <thead> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td>Western skipjack tuna (<i>Katsuwonus pelamis</i>)</td> <td>Fishers use purse seine gear (about 98% of catch) and sometimes pole and line when fishing for skipjack tuna.</td> <td>Western skipjack tuna is a pelagic species that can be found to depths of 260 m (AFMA, 2021b).</td> </tr> <tr> <td><b>Fishing effort:</b></td> <td colspan="2">The Skipjack Tuna Fishery (STF) has not been actively fished since the 2008-2009 fishing season (Patterson <i>et al.</i>, 2020). The management arrangements for this fishery will be reviewed if active boats re-enter the fishery.</td> </tr> <tr> <td><b>Active licences/vessels:</b></td> <td colspan="2">No active vessels operating since 2009.</td> </tr> </tbody> </table>	Species targeted	Fishing methods	Fishing depth	Western skipjack tuna ( <i>Katsuwonus pelamis</i> )	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).	<b>Fishing effort:</b>	The Skipjack Tuna Fishery (STF) has not been actively fished since the 2008-2009 fishing season (Patterson <i>et al.</i> , 2020). The management arrangements for this fishery will be reviewed if active boats re-enter the fishery.		<b>Active licences/vessels:</b>	No active vessels operating since 2009.			
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Western Tuna and Billfish Fishery	✓	✓	✓	<table border="1"> <thead> <tr> <th>Management area</th> <td>The Western Tuna and Billfish Fishery (WTBF) extends to the Australian EEZ boundary in the Indian Ocean.</td> </tr> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td>Bigeye tuna (<i>Thunnus obesus</i>) Yellowfin tuna (<i>Thunnus albacares</i>) Swordfish (<i>Xiphias gladius</i>) Albacore (<i>Thunnus alalunga</i>) Striped marlin (<i>Kajikia audax</i>)</td> <td>Fishers mainly use pelagic longline fishing gear to catch the targeted species. Minor line (including handline, troll, rod and reel) can also be used.</td> <td>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).</td> </tr> <tr> <td><b>Fishing effort:</b></td> <td colspan="2">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.</td> </tr> <tr> <td><b>Active licences/vessels:</b></td> <td colspan="2">Two pelagic longline vessels and two minor longline vessels (Patterson <i>et al.</i>, 2020).</td> </tr> </tbody> </table>	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 ( <i>Thunnus obesus</i> ) Yellowfin tuna ( <i>Thunnus albacares</i> ) Swordfish ( <i>Xiphias gladius</i> ) Albacore ( <i>Thunnus alalunga</i> ) Striped marlin ( <i>Kajikia audax</i> )	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).	<b>Fishing effort:</b>	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.		<b>Active licences/vessels:</b>	Two pelagic longline vessels and two minor longline vessels (Patterson <i>et al.</i> , 2020).	
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<b>Active licences/vessels:</b>	One active vessel in 2018-2019 (Patterson <i>et al.</i> , 2020).																	
North-west Slope Trawl Fishery	✓	✓		<b>Management area</b>	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).													
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>												
				Australian scampi ( <i>Metanephrops australiensis</i> ) and smaller quantities of velvet and Boschma's scampi ( <i>M. velutinus</i> and <i>M. boschmai</i> ) Mixed snappers have historically been an important component of the catch.	Demersal trawl.	Typically at depths of 350 to 600 m (Patterson <i>et al.</i> , 2017), however stakeholder consultation has indicated that this may be to depths of 800 m.												

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p><b>Fishing effort:</b> 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 <i>et al.</i> 2020). Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope (Patterson <i>et al.</i>, 2017).</p> <p><b>Active licences/vessels:</b> Four vessels (Patterson <i>et al.</i>, 2020).</p>		
<b>State Managed Fisheries</b>						
<b>Pilbara Fish Trawl (Interim) Managed Fishery</b>		✓		<p><b>Management area</b> 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 <i>et al.</i>, 2020a). No fish trawl units have been allocated for use in Area 6 of Zone 2 since the management plan commenced operation in 1998.</p>		
				<p><b>Species targeted</b></p> <p>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 <i>et al.</i>, 2020a).</p>	<p><b>Fishing methods</b></p> <p>Demersal trawl.</p>	<p><b>Fishing depth</b></p> <p>The Pilbara Fish Trawl Fishery lands the largest component of the catch and operates in waters between 50 and 200 m water depth (Allen <i>et al.</i>, 2014, Newman <i>et al.</i> 2015). Stakeholders have advised that trawling can occur in depths of up to approximately 800 m.</p>
				<p><b>Fishing effort:</b></p> <p>Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years:</p>		

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p>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.</p> <p><b>Active licences/vessels:</b> Two Pilbara Trawl (Interim) Managed Fishery vessels in 2017 (Newman <i>et al.</i>, 2020a). Active vessels data are confidential as there were fewer than three vessels in the Pilbara Fish Trawl Interim Managed Fishery (Newman <i>et al.</i>, 2020a).</p>		
Pilbara Trap Managed Fishery		✓	✓	<p><b>Management area</b> 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.</p>		
				<p><b>Species targeted</b></p> <p>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.</p>	<p><b>Fishing methods</b></p> <p>Demersal fish traps.</p>	<p><b>Fishing depths</b></p> <p>Greatest effort in waters less than 50 m depth targeting high value species such as red emperor and goldband snapper.</p>
				<p><b>Fishing effort</b></p> <p>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 <i>et al.</i>, 2019).</p>		

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p><b>Active licences/vessels</b></p> <p>In the 2019 season, there were six licences in the Pilbara Trap Managed Fishery, (Newman <i>et al.</i>, 2020a). Active vessels data are confidential as there were fewer than three vessels in the Pilbara Trap Managed Fishery (Newman <i>et al.</i>, 2019).</p>		
Pilbara Line Managed Fishery		✓	✓	<p><b>Management area</b></p> <p>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.</p>		
				<p><b>Species targeted</b></p>	<p><b>Fishing method</b></p>	<p><b>Fishing depths</b></p>
				<p>The Pilbara Line Managed Fishery catch is made up around 45-50 different fish species.</p> <p>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</p> <p>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.</p>	<p>Demersal long line.</p>	<p>Pilbara Line Fishing Depth: Operates up to a depth of 600 m.</p>
				<p><b>Fishing effort</b></p>	<p>Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years:</p> <p>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.</p> <p>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 <i>et al.</i>, 2019).</p>	

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<b>Active licences/vessels</b> 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 <i>et al.</i> , 2018).		
Mackerel Managed Fishery	✓	✓	✓	<b>Management area</b> 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).		
				<b>Species targeted</b> Spanish mackerel ( <i>Scomberomorus commerson</i> ) Grey mackerel ( <i>S. semifasciatus</i> ) Other species from the genus <i>Scomberomorus</i>	<b>Fishing methods</b> Near-surface trawling gear. Jig fishing.	<b>Fishing depth</b> Previous engagement with WAFIC suggests that the depth of fisheries may extend to 70 m.
				<b>Fishing effort:</b> 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 <i>et al.</i> , 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 <i>et al.</i> , 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 <i>et al.</i> , 2020), 283 t in 2017-18, 276 t in 2016-17, 302 t in 2015-16, 322 t in 2014-15.		
				<b>Active licences/vessels:</b> Fifteen boats fished in 2018, with approximately 35-40 people directly employed in the Mackerel Managed Fishery, primarily from May-November (Lewis <i>et al.</i> , 2020).		
Marine Aquarium Managed Fishery	✓	✓	✓	<b>Management area</b> 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 <i>et al.</i> , 2020b).		
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>

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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.
				<b>Fishing effort:</b>	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.	
				<b>Active licences/vessels:</b>	Eleven licences were active in 2019 (Newman <i>et al.</i> , 2020b).	
Beche-de-mer Fishery	✓	✓	✓	<b>Management area</b>	Fishing occurs in the northern half of WA from Exmouth Gulf to the NT border and is managed under Ministerial Exemptions.	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>
				The sea cucumber fishery targets two main species: sandfish ( <i>Holothuria scabra</i> ) and redfish ( <i>Actinopyga echinites</i> ).	Diving	The targeted species typically inhabit nearshore in shallow depths.
				<b>Fishing effort</b>	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	
				<b>Active licences/vessels</b>	Six active licences in 2019 (Hart <i>et al.</i> , 2019). Active vessels data is confidential as there were fewer than three vessels.	
Onslow Prawn Managed Fishery		✓		<b>Management area</b>	The Onslow Prawn Managed Fishery encompasses a portion of the continental shelf off the Pilbara.	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>

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Fishery	Woodside Activity Area			Description						
	Browse	NWS/S	NW Cape							
				<p>The fishery targets: Western king prawns (<i>Penaeus esculentus</i>) Brown tiger prawns (<i>Penaeus esculentus</i>) Blue endeavour prawns (<i>Metapenaeus endeavouri</i>)</p> <p>Low opening, otter prawn trawl systems.</p> <p>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 <i>et al.</i>, 2015).</p> <p><b>Fishing effort:</b> The total landings for the Onslow Prawn Managed Fishery in 2018 were less than 60 t below the target catch range (Kangas <i>et al.</i>, 2020a).</p> <p><b>Active licences/vessels:</b> One vessel (Kangas <i>et al.</i>, 2020a).</p>						
<b>Pearl Oyster Managed Fishery</b>	✓	✓	✓	<p><b>Management area</b> 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.</p> <table border="1"> <thead> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td>Pearl oysters (<i>Pinctada maxima</i>).</td> <td>Drift diving.</td> <td>Fishing effort is mostly focussed in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs <i>et al.</i> 2002).</td> </tr> </tbody> </table> <p><b>Fishing effort:</b> 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).</p> <p><b>Active licences/vessels:</b> 15,637 diver hours (Hart <i>et al.</i>, 2020a).</p>	Species targeted	Fishing methods	Fishing depth	Pearl oysters ( <i>Pinctada maxima</i> ).	Drift diving.	Fishing effort is mostly focussed in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs <i>et al.</i> 2002).
Species targeted	Fishing methods	Fishing depth								
Pearl oysters ( <i>Pinctada maxima</i> ).	Drift diving.	Fishing effort is mostly focussed in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs <i>et al.</i> 2002).								
		✓	✓	<p><b>Management area</b> 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</p>						

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Fishery	Woodside Activity Area			Description						
	Browse	NWS/S	NW Cape							
<b>Pilbara Crab Managed Fishery</b>				nearshore are currently closed as per Schedule 2 of the Draft Management Plan for the Pilbara Crab Managed Fishery.						
				<table border="1"> <thead> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td>Crabs of the Family Portunidae, excluding crabs of the genus <i>Scylla</i>.</td> <td>Traps.</td> <td>Up to 50 m deep.</td> </tr> </tbody> </table>	Species targeted	Fishing methods	Fishing depth	Crabs of the Family Portunidae, excluding crabs of the genus <i>Scylla</i> .	Traps.	Up to 50 m deep.
	Species targeted	Fishing methods	Fishing depth							
	Crabs of the Family Portunidae, excluding crabs of the genus <i>Scylla</i> .	Traps.	Up to 50 m deep.							
				<b>Fishing effort:</b> The capacity of the fishery is 600 traps.						
			<b>Active licences/vessels:</b> No information available at this time.							
			<b>Management area</b> 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.							
<b>South-west Coast Salmon Managed Fishery</b>	✓	✓	✓	<table border="1"> <thead> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td>Western Australian salmon (<i>Arripis truttaceus</i>)</td> <td>Beach seine nets.</td> <td>Information not available however, species generally found in shallow waters (up to 30 m).</td> </tr> </tbody> </table>	Species targeted	Fishing methods	Fishing depth	Western Australian salmon ( <i>Arripis truttaceus</i> )	Beach seine nets.	Information not available however, species generally found in shallow waters (up to 30 m).
	Species targeted	Fishing methods	Fishing depth							
	Western Australian salmon ( <i>Arripis truttaceus</i> )	Beach seine nets.	Information not available however, species generally found in shallow waters (up to 30 m).							
				<b>Fishing effort:</b> 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).						
			<b>Active licences/vessels:</b> Six licences.							
			<b>Management area</b> 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,							
	✓	✓	✓							

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
<b>Specimen Shell Managed Fishery</b>				Geraldton, Perth, Mandurah, the Capes area and Albany (Hart <i>et al.</i> , 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.			
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>	
				The Specimen Shell Managed Fishery targets the collection of specimen shells for display, collection, cataloguing and sale.	Collection is predominantly by hand when diving to wading in shallow, coastal waters, though in deeper water collection may be conducted by remotely operated vehicles (limited to one per licence).	For collection by hand, (diver-based) this typically restricts effort to safe diving depths (less than 30 m). ROV collection could enable depths up to 300 m (Hart <i>et al.</i> , 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.	
				<b>Fishing effort:</b>	Information not available.		
				<b>Active licences/vessels:</b>	In 2018 there were 31 licences with only two divers allowed in the water per licences at one time (Hart <i>et al.</i> , 2018). The number of people employed regularly in the fishery is likely to be about 21 (Hart <i>et al.</i> , 2018).		
<b>West Australian Abalone Fishery</b>	✓	✓	✓	<b>Management area</b>			
				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.			
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>	
Greenlip abalone ( <i>Haliotis laevis</i> ) Brownlip abalone ( <i>Haliotis conicopora</i> ) Roe's abalone ( <i>Haliotis roei</i> )	Divers.	Distribution to 5 m depth for Roe's abalone and 40 m depth for greenlip / brownlip abalone (DOF, 2011).					

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p><b>Fishing effort:</b> 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 <i>et al.</i>, 2018).</p> <p><b>Active licences/vessels:</b> 26 vessels active in Roe’s abalone fishery (WAFIC<sup>5</sup>).</p>		
<b>West Coast Deep Sea Crustacean Managed Fishery</b>	✓	✓	✓	<p><b>Management area</b> 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.</p>		
				<p><b>Species targeted</b></p>	<p><b>Fishing methods</b></p>	<p><b>Fishing depth</b></p>
				<p>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 (<i>Chaceon albus</i>) Giant (king) crab (<i>Pseudocarcinus gigas</i>) Champagne (spiny) crabs (<i>Hypothalassia acerba</i>)</p>	<p>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.</p>	<p>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<sup>6</sup>).</p>
				<p><b>Fishing effort:</b> 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.</p>		
				<p><b>Active licences/vessels:</b> There were four active vessels in 2018 (How and Orme, 2020a).</p>		

<sup>5</sup> <https://www.wafic.org.au/fishery/roes-abalone-fishery/>

<sup>6</sup> <https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/>

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
Abrolhos Islands and Mid-West Trawl Fishery			✓	<b>Management area</b>	The Abrolhos Islands and Mid-West Trawl Fishery (AIMWTMF) operates around the Abrolhos Islands within the SWMR.	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>
				Saucer scallops ( <i>Ylistrum balloti</i> , formerly <i>Amusium balloti</i> )	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 <i>et al.</i> , 2009).
				<b>Fishing effort:</b>	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 spawning stock (Kangas <i>et al.</i> , 2020b). The fishery was closed between 2011 and 2016.	
				<b>Active licences/vessels:</b>	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	✓			<b>Management area</b>	The Broome Prawn Managed Fishery (BPMF) operates off Broome and forms part of the North Coast Prawn Fishery.	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>
				Western king prawn ( <i>Penaeus latisulcatus</i> ) Coral prawn	Trawl.	Trawling is generally in waters between 30 and 60 m deep, however can occur down to 100 m (DOEH, 2004).
				<b>Fishing effort:</b>	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 <i>et al.</i> , 2020a).	

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				<b>Active licences/vessels:</b> Two vessels conducting fishing trial operated in 2018 (Kangas <i>et al.</i> , 2020a).			
Exmouth Gulf Prawn Managed Fishery			✓	<b>Management area</b> The estimated employment in the fishery in 2017 was 18 people including skippers and other crew (Kangas <i>et al.</i> , 2018). The fishery occupies a total area of 4000 km <sup>2</sup> , with only half of this area being trawled (Fletcher and Santoro, 2015).			
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>	
				Western king prawn ( <i>Penaeus latisulcatus</i> ) Brown tiger prawn ( <i>Penaeus esculentus</i> ) Blue endeavour prawn ( <i>Metapenaeus endeavouri</i> ) Banana prawn ( <i>Penaeus merguinensis</i> )	Trawl.	Information not available.	
				<b>Fishing effort:</b>	The total landings of prawns in 2018 were 880 t (Kangas <i>et al.</i> , 2020a). In the 2016 season, a fishing effort of about 23,000 hours resulted in a catch of 822 t.		
				<b>Active licences/vessels:</b>	The precise number of vessels is unreported. Eighteen people were said to be employed in this fishery in 2018 (Kangas <i>et al.</i> , 2019); however, in 2013 it was reported that 18 skippers as well as other crew and support staff were employed (WAFIC <sup>7</sup> ).		
Gascoyne Demersal Scalefish Managed Fishery			✓	<b>Management area</b> 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 <sup>8</sup> ).			
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>	

<sup>7</sup> <https://www.wafic.org.au/fishery/exmouth-gulf-prawn-fishery/>

<sup>8</sup> <https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/>

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Pink snapper ( <i>Chrysophrys auratus</i> ) Goldband snapper ( <i>Pristipomoides multidentis</i> ) Red emperor ( <i>Lutjanus sebae</i> ) Cods ( <i>Gadus morhua</i> ) Emperors ( <i>Lethrinus miniatus</i> )	Mechanised handlines.	Information not available.
				<b>Fishing effort:</b>	The GDSF reported a total commercial catch of 210 t in 2017-18.	
				<b>Active licences/vessels:</b>	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	✓			<b>Management area</b>	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).	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>
				Brown mud crab ( <i>Scylla olivacea</i> ) Green mud crab ( <i>Scylla serrata</i> )	Trap.	Information not available.
				<b>Fishing effort:</b>	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 <i>et al.</i> , 2020).	
				<b>Active licences/vessels:</b>	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 <i>et al.</i> , 2020).	
Nickol Bay Prawn Managed Fishery		✓		<b>Management area</b>	The Nickol Bay Prawn Managed Fishery operates in nearshore and offshore waters of the Pilbara region along the NWS.	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>

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Fishery	Woodside Activity Area			Description						
	Browse	NWS/S	NW Cape							
				<p>Banana prawn (<i>Penaeus merguensis</i>)            Western king prawn (<i>Penaeus latisulcatus</i>)            Brown tiger prawn (<i>Penaeus esculentus</i>)            Blue endeavour prawn (<i>Metapenaeus endeavouri</i>)</p> <p><b>Fishing effort:</b> 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 <i>et al.</i>, 2020a).</p> <p><b>Active licences/vessels:</b> The precise number of vessels is unreported, though low effort produced a catch of 17 t in 2016 (Kangas <i>et al.</i>, 2018).</p>						
<b>Northern Demersal Scalefish Managed Fishery</b>	✓			<p><b>Management area</b> The fishery is divided into two fishing areas: an inshore sector (Area 1) and an offshore sector (Area 2) (Newman <i>et al.</i>, 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 <i>et al.</i>, 2017).</p> <table border="1"> <thead> <tr> <th>Species targeted</th> <th>Fishing methods</th> <th>Fishing depth</th> </tr> </thead> <tbody> <tr> <td>           Goldband snapper (<i>Pristipomoides multidentis</i>)            Blue-spotted emperor (<i>Lethrinus punctulatus</i>)            Red emperor (<i>Lutjanus sebae</i>)            Rankin cod (<i>Epinephelus multinotatus</i>)         </td> <td>Line fishing, handline, dropline and fish trap fishing.</td> <td>Information not available.</td> </tr> </tbody> </table>	Species targeted	Fishing methods	Fishing depth	Goldband snapper ( <i>Pristipomoides multidentis</i> ) Blue-spotted emperor ( <i>Lethrinus punctulatus</i> ) Red emperor ( <i>Lutjanus sebae</i> ) Rankin cod ( <i>Epinephelus multinotatus</i> )	Line fishing, handline, dropline and fish trap fishing.	Information not available.
Species targeted	Fishing methods	Fishing depth								
Goldband snapper ( <i>Pristipomoides multidentis</i> ) Blue-spotted emperor ( <i>Lethrinus punctulatus</i> ) Red emperor ( <i>Lutjanus sebae</i> ) Rankin cod ( <i>Epinephelus multinotatus</i> )	Line fishing, handline, dropline and fish trap fishing.	Information not available.								

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Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				<p><b>Fishing effort:</b> 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 <i>et al.</i>, 2019).</p> <p><b>Active licences/vessels:</b> Six vessels fished in the 2018 season and at least 20 people were directly employed (Gaughan and Santoro, 2018).</p>			
Octopus Interim Management Fishery				<p><b>Management area</b> The developing Octopus Fishery operates from Kalbarri Cliffs in the north to Esperance in the south.</p>			
				<p><b>Species targeted</b></p>	<p><b>Fishing methods</b></p>	<p><b>Fishing depth</b></p>	
				<p><i>Octopus sp. cf. tetricus</i></p>	<p>Passive shelter pots and active traps.</p>	<p>In inshore waters to a depth of 70 m (DPIRD, 2018).</p>	
				<p><b>Fishing effort:</b></p>	<p>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 <i>et al.</i>, 2020c).</p>		
				<p><b>Active licences/vessels:</b></p>	<p>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).</p>		
Shark Bay Beach Seine and Mesh Net Managed Fishery				<p><b>Management area</b> The Shark Bay Beach Seine and Mesh Net Managed Fishery operates from Denham.</p>			
				<p><b>Species targeted</b></p>	<p><b>Fishing methods</b></p>	<p><b>Fishing depth</b></p>	
				<p>Whiting (yellowfin <i>Sillago schomburgkii</i> and goldenline <i>S. analis</i>) Sea mullet (<i>Mugil cephalus</i>) Tailor (<i>Pomatomus saltatrix</i>) Western yellowfin bream (<i>Acanthopagrus australis</i>)</p>	<p>Beach seine and mesh net.</p>	<p>Information not available.</p>	

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p><b>Fishing effort:</b> 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<sup>9</sup>).</p> <p><b>Active licences/vessels:</b> Six vessels operated employing around 12 fishers (Gaughan and Santoro, 2018).</p>		
Shark Bay Crab Managed Fishery				<p><b>Management area</b> The Shark Bay Crab Managed Fishery operates within the NWMR.</p>		
				<p><b>Species targeted</b></p>	<p><b>Fishing methods</b></p>	<p><b>Fishing depth</b></p>
				Blue swimmer crab ( <i>Portunus armatus</i> )	Trap and trawl.	Information not available.
				<p><b>Fishing effort:</b> 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 <i>et al.</i>, 2017).</p>	<p><b>Active licences/vessels:</b> 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<sup>10</sup>).</p>	
				<p><b>Management area</b> The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns.</p>		
Shark Bay Prawn and Scallop Managed Fishery				<p><b>Species targeted</b></p>	<p><b>Fishing methods</b></p>	<p><b>Fishing depth</b></p>
				Western king prawn ( <i>Penaeus latisulcatus</i> ) Brown tiger prawn ( <i>Penaeus esculentus</i> )	Low-opening otter trawls.	Information not available.
				<p><b>Management area</b> The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns.</p>		

<sup>9</sup> <https://www.wafic.org.au/fishery/inner-shark-bay-scalefish-fishery/>

<sup>10</sup> <https://www.wafic.org.au/fishery/shark-bay-prawn-and-scallop-managed-fisheries/>

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p>Endeavour prawns (<i>Metapenaeus endeavouri</i>) Coral prawns (<i>Metapenaeopsis sp.</i>) Saucer scallop (<i>Amusium balloti</i>)</p> <p><b>Fishing effort:</b> 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 <i>et al.</i>, 2018).</p> <p><b>Active licences/vessels:</b> 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 <i>et al.</i>, 2015).</p>		
South Coast Crustacean Managed Fishery	-	-	-	<p><b>Management area</b> 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.</p>		
				<p><b>Species targeted</b></p>	<p><b>Fishing methods</b></p>	<p><b>Fishing depth</b></p>
				<p>Southern rock lobster (<i>Jasus edwardsii</i>) Western rock lobster (<i>Panulirus cygnus</i>) Giant crab (<i>Pseudocarcinus gigas</i>) Crystal crab (<i>Chaceon albus</i>) Champagne crab (<i>Hypothalassia acerba</i>)</p>	<p>Pots.</p>	<p>Information not available.</p>
				<p><b>Fishing effort:</b> 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).</p>	<p><b>Active licences/vessels:</b> The number of vessels is unknown; however, a total of 1977 pots are licensed to be used.</p>	
				<p><b>Management area</b> 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).</p>		
	-	-	-	<p><b>Management area</b> 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).</p>		

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Fishery	Woodside Activity Area			Description												
	Browse	NWS/S	NW Cape													
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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
The South Coast Salmon Managed Fishery	-	-	-	<b>Management area</b>	The South Coast Salmon Managed Fishery is one of two fisheries operating in the South Coast Bioregion that target nearshore and estuarine finfish.	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>
				Western Australian salmon ( <i>Arripis truttaceus</i> ) Southern school whiting ( <i>Sillago bassensis</i> ) Australian herring ( <i>Arripis georgianus</i> ) King George whiting ( <i>Sillaginodes punctatus</i> ) Sea mullet ( <i>Mugil cephalus</i> ) Estuary cobbler ( <i>Cnidoglanis macrocephalus</i> ) Black bream ( <i>Acanthopagrus butcheri</i> )	Beach seines, haul nets and gill nets.	Information not available.
				<b>Fishing effort:</b>	The total catch for 2018 was 243 t (Duffy and Blay, 2020b).	
				<b>Active licences/vessels:</b>	Number of vessels is unknown; however, 12 commercial fishers were employed in 2018 (Duffy and Blay, 2020b).	
West Coast Beach Bait Managed Fishery	-	-	-	<b>Management area</b>	Primarily active in the Bunbury areas in the SWMR.	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>
				Whitebait	Beach-based haul nets.	Information not available.
				<b>Fishing effort:</b>	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).	

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	Browse	NWS/S	NW Cape																			
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				<b>Management area</b>	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.																	
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>																
Baldchin groper ( <i>Choerodon rubescens</i> ) Dhufish ( <i>Glaucosoma hebraicum</i> ) Pink snapper ( <i>Pagrus auratus</i> )	Lines.	Inshore species – 20 to 250 m water depth.																				

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<p>Offshore species – more than 250 m water depth.</p> <p><b>Fishing effort:</b> In 2016, the West Coast Demersal Scalefish (interim) Managed Fishery reported a total catch of 256 t.</p> <p><b>Active licences/vessels:</b> 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.</p>		
West Coast Purse Seine Managed Fishery	-	-	-	<p><b>Management area</b> Located in waters from Cape Bouvard extending to Lancelin.</p>		
				<p><b>Species targeted</b></p>	<p><b>Fishing methods</b></p>	<p><b>Fishing depth</b></p>
				<p>Small pelagic finfish such as:            Scaly mackerel (<i>Sardinella lemuru</i>)            Pilchards (<i>Sardinops sagax</i>)            Australian anchovy (<i>Engraulis australis</i>)            Yellowtail scad (<i>Trachurus novaezelandiae</i>)            Maray (<i>Etrumeus teres</i>)</p>	<p>Purse seine.</p>	<p>Information not available.</p>
				<p><b>Fishing effort:</b> Information not available</p> <p><b>Active licences/vessels:</b> Seven vessels in 2017 (Gaughan and Santoro, 2018).</p>		
West Coast Rock Lobster Managed Fishery			✓	<p><b>Management area</b> 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.</p>		

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Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				<b>Species targeted</b>	<b>Fishing methods</b>	<b>Fishing depth</b>
				Western rock lobster ( <i>Panulirus cygnus</i> )	Baited pots.	Less than 20 m.
				<b>Fishing effort:</b>	In 2018, 234 vessels reported a total catch of 6400 t in 2017 (de Lestang <i>et al.</i> , 2018). In 2016, 226 vessels reported a total catch of 6,086 t (Gaughan and Santoro, 2018).	
				<b>Active licences/vessels:</b>	234 vessels operated in 2017 and 233 vessels operated in 2018 (Gaughan and Santoro, 2018).	

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## 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.

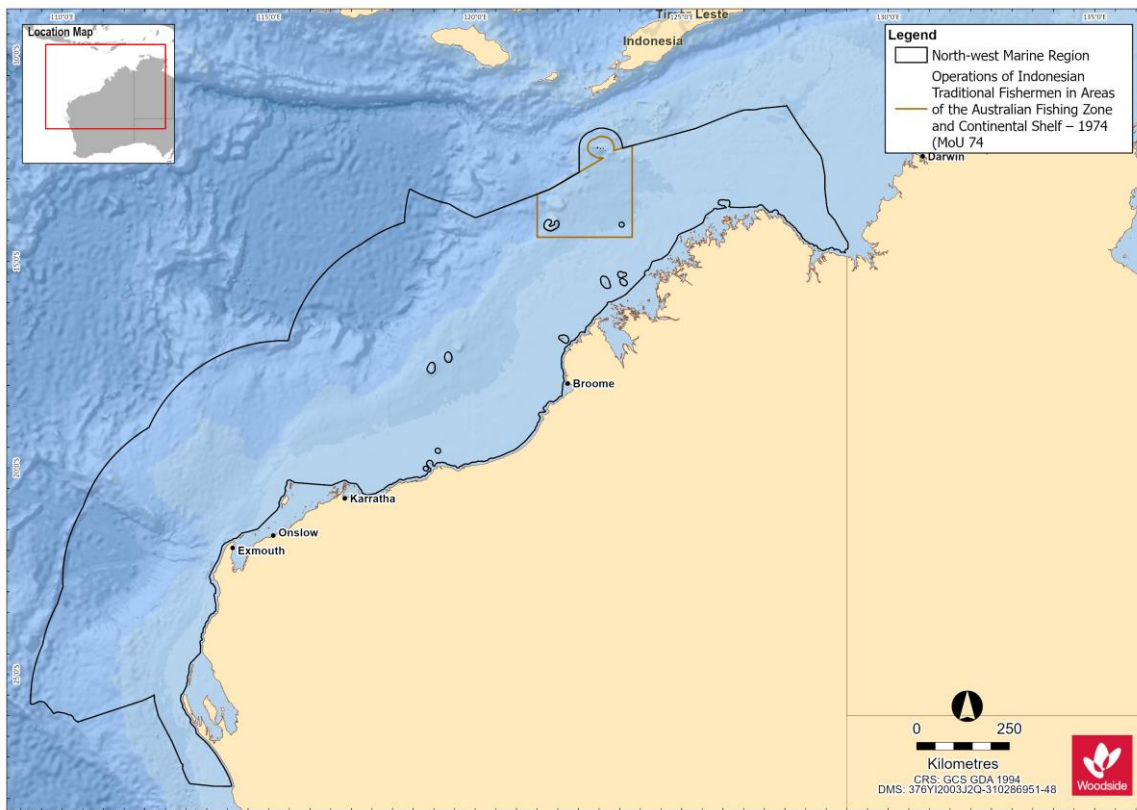
Dugong, fish and marine turtles that move between coastal and Commonwealth waters are important components of the Aboriginal people's culture and diet. Aboriginal people continue to actively manage their sea country in coastal waters of WA in order to protect and manage the marine environment, its resources 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<sup>11</sup>).

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<sup>12</sup>).

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).

<sup>11</sup> <https://www.gdc.wa.gov.au/industry-profiles/tourism/>

<sup>12</sup> <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**





# 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 12:59:15

[Summary](#)

[Details](#)

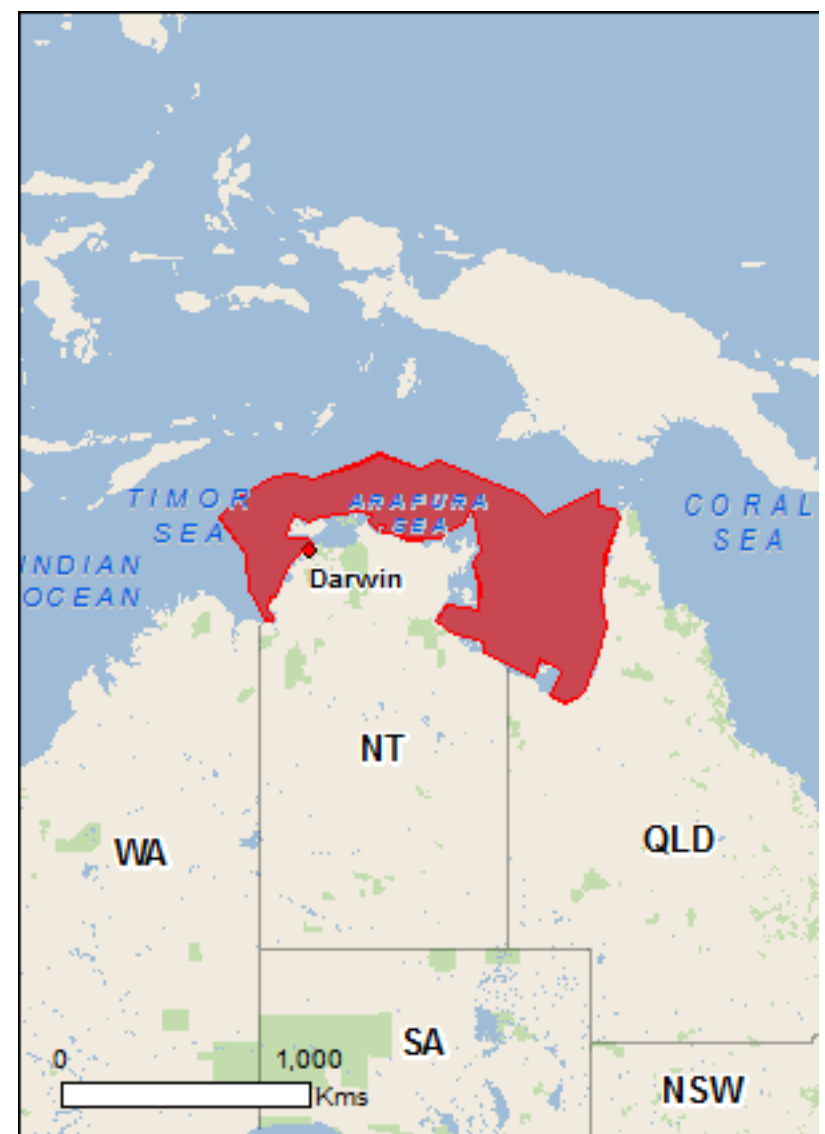
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



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[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](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance:</a>	None
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	2
<a href="#">Listed Threatened Ecological Communities:</a>	None
<a href="#">Listed Threatened Species:</a>	33
<a href="#">Listed Migratory Species:</a>	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.

<a href="#">Commonwealth Land:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	127
<a href="#">Whales and Other Cetaceans:</a>	25
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	15

## Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<a href="#">State and Territory Reserves:</a>	2
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	1
<a href="#">Nationally Important Wetlands:</a>	1
<a href="#">Key Ecological Features (Marine)</a>	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
<b>Birds</b>		
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Erythrura gouldiae</a> Gouldian Finch [413]	Endangered	Species or species habitat may occur within area
<a href="#">Falcunculus frontatus whitei</a> Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Limosa lapponica baueri</a> 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
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
<b>Mammals</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Macroderma gigas</a> Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Notomys aquilo</a> Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area
<a href="#">Saccolaimus saccolaimus nudicluniatus</a> Bare-rumped Sheath-tailed Bat, Bare-rumped Sheath-tail Bat [66889]	Vulnerable	Species or species habitat may occur within area
<a href="#">Xeromys myoides</a> Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
<b>Reptiles</b>		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Cryptoblepharus gurrumul</a> Arafura Snake-eyed Skink [83106]	Endangered	Species or species habitat known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
<b>Sharks</b>		
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
<a href="#">Glyphis garricki</a> Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
<a href="#">Glyphis glyphis</a> Speartooth Shark [82453]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> 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
<b>Migratory Marine Birds</b>		
<a href="#">Anous stolidus</a> Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Sternula albifrons</a> Little Tern [82849]		Species or species habitat may occur within area
<a href="#">Sula leucogaster</a> Brown Booby [1022]		Breeding known to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Anoxypristis cuspidata</a> Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area



Name	Threatened	Type of Presence
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Crocodylus porosus</a> Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat known to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
<a href="#">Isurus oxyrinchus</a> Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
<a href="#">Isurus paucus</a> Longfin Mako [82947]		Species or species habitat likely to occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
<a href="#">Manta alfredi</a> 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
<a href="#">Manta birostris</a> 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
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
<a href="#">Orcaella heinsohni</a> Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
<a href="#">Sousa chinensis</a> Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Cecropis daurica</a> Red-rumped Swallow [80610]		Species or species habitat may occur within area
<a href="#">Cuculus optatus</a> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
<a href="#">Hirundo rustica</a> Barn Swallow [662]		Species or species habitat may occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Acrocephalus orientalis</a> Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Species or species habitat likely to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
<a href="#">Glareola maldivarum</a> Oriental Pratincole [840]		Species or species habitat may occur within area
<a href="#">Limicola falcinellus</a> Broad-billed Sandpiper [842]		Species or species habitat likely to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Species or species habitat known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat known to occur within area
<a href="#">Pluvialis fulva</a> Pacific Golden Plover [25545]		Species or species habitat known to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]		Species or species habitat known to occur within area
<a href="#">Thalasseus bergii</a> Greater Crested Tern [83000]		Breeding likely to occur within area
<a href="#">Tringa brevipes</a> Grey-tailed Tattler [851]		Species or species



Name	Threatened	Type of Presence
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		habitat known to occur within area  Species or species habitat known to occur within area
<a href="#">Tringa stagnatilis</a> Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
<a href="#">Xenus cinereus</a> 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
<b>Birds</b>		
<a href="#">Acrocephalus orientalis</a> Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Anous stolidus</a> Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Species or species habitat likely to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius ruficapillus</a> Red-capped Plover [881]		Species or species habitat known to occur within area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
<a href="#">Glareola maldivarum</a> Oriental Pratincole [840]		Species or species habitat may occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
<a href="#">Heteroscelus brevipes</a> Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
<a href="#">Himantopus himantopus</a> Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
<a href="#">Hirundo daurica</a> Red-rumped Swallow [59480]		Species or species habitat may occur within area
<a href="#">Hirundo rustica</a> Barn Swallow [662]		Species or species habitat may occur within area
<a href="#">Limicola falcinellus</a> Broad-billed Sandpiper [842]		Species or species habitat likely to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Species or species habitat known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat known to occur within area
<a href="#">Pluvialis fulva</a> Pacific Golden Plover [25545]		Species or species habitat known to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]		Species or species habitat known to occur within area
<a href="#">Recurvirostra novaehollandiae</a> Red-necked Avocet [871]		Species or species habitat known to occur within area
<a href="#">Rostratula benghalensis (sensu lato)</a> Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
<a href="#">Sterna albifrons</a> Little Tern [813]		Species or species habitat may occur within area
<a href="#">Sterna bengalensis</a> Lesser Crested Tern [815]		Breeding known to occur within area
<a href="#">Sterna bergii</a> Crested Tern [816]		Breeding likely to occur within area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Stiltia isabella</a> Australian Pratincole [818]		Species or species habitat known to occur within area
<a href="#">Sula leucogaster</a> Brown Booby [1022]		Breeding known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
<a href="#">Tringa stagnatilis</a> Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]		Species or species habitat known to occur within area

Fish

Name	Threatened	Type of Presence
<a href="#">Acentronura tentaculata</a> Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
<a href="#">Bhanotia fasciolata</a> Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
<a href="#">Campichthys tricarinatus</a> Three-keel Pipefish [66192]		Species or species habitat may occur within area
<a href="#">Choeroichthys brachysoma</a> Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
<a href="#">Choeroichthys suillus</a> Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
<a href="#">Corythoichthys amplexus</a> Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
<a href="#">Corythoichthys flavofasciatus</a> Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
<a href="#">Corythoichthys haematopterus</a> Reef-top Pipefish [66201]		Species or species habitat may occur within area
<a href="#">Corythoichthys intestinalis</a> Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
<a href="#">Corythoichthys ocellatus</a> Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
<a href="#">Corythoichthys schultzi</a> Schultz's Pipefish [66205]		Species or species habitat may occur within area
<a href="#">Cosmocampus banneri</a> Roughridge Pipefish [66206]		Species or species habitat may occur within area
<a href="#">Cosmocampus maxweberi</a> Maxweber's Pipefish [66209]		Species or species habitat may occur within area
<a href="#">Doryrhamphus dactyliophorus</a> Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
<a href="#">Doryrhamphus excisus</a> Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
<a href="#">Doryrhamphus janssi</a> Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
<a href="#">Festucalex cinctus</a> Girdled Pipefish [66214]		Species or species habitat may occur within area
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Halicampus brocki</a> Brock's Pipefish [66219]		Species or species habitat may occur within area
<a href="#">Halicampus dunckeri</a> Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
<a href="#">Halicampus macrorhynchus</a> Whiskered Pipefish, Ornate Pipefish [66222]		Species or species habitat may occur within area
<a href="#">Halicampus spirostris</a> Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
<a href="#">Haliichthys taeniophorus</a> Ribbioned Pipehorse, Ribbioned Seadragon [66226]		Species or species habitat may occur within area
<a href="#">Hippichthys cyanospilos</a> Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
<a href="#">Hippichthys heptagonus</a> Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
<a href="#">Hippichthys parvicarinatus</a> Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
<a href="#">Hippichthys spicifer</a> Belly-barred Pipefish, Banded Freshwater Pipefish [66232]		Species or species habitat may occur within area
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
<a href="#">Hippocampus histrix</a> Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area
<a href="#">Hippocampus spinosissimus</a> Hedgehog Seahorse [66239]		Species or species habitat may occur within area
<a href="#">Hippocampus trimaculatus</a> Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
<a href="#">Hippocampus zebra</a> Zebra Seahorse [66241]		Species or species habitat may occur within area



Name	Threatened	Type of Presence
<a href="#">Micrognathus brevirostris</a> thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
<a href="#">Micrognathus micronotopterus</a> Tidepool Pipefish [66255]		Species or species habitat may occur within area
<a href="#">Microphis brachyurus</a> Short-tail Pipefish, Short-tailed River Pipefish [66257]		Species or species habitat may occur within area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus longirostris</a> Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
<b>Mammals</b>		
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat known to occur within area
<b>Reptiles</b>		
<a href="#">Acalyptophis peronii</a> Horned Seasnake [1114]		Species or species habitat may occur within area
<a href="#">Aipysurus duboisii</a> Dubois' Seasnake [1116]		Species or species habitat may occur within area
<a href="#">Aipysurus eydouxii</a> Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
<a href="#">Aipysurus laevis</a> Olive Seasnake [1120]		Species or species habitat may occur within area
<a href="#">Astrotia stokesii</a> Stokes' Seasnake [1122]		Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Crocodylus porosus</a> Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area
<a href="#">Disteira major</a> Olive-headed Seasnake [1124]		Species or species habitat may occur within area
<a href="#">Emydocephalus annulatus</a> Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
<a href="#">Enhydrina schistosa</a> Beaked Seasnake [1126]		Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
<a href="#">Hydrelaps darwiniensis</a> Black-ringed Seasnake [1100]		Species or species habitat may occur within area
<a href="#">Hydrophis atriceps</a> Black-headed Seasnake [1101]		Species or species habitat may occur within area
<a href="#">Hydrophis caeruleus</a> Dwarf Seasnake [1103]		Species or species habitat may occur within area
<a href="#">Hydrophis coggeri</a> Slender-necked Seasnake [25925]		Species or species habitat may occur within area
<a href="#">Hydrophis czebalukovi</a> Fine-spined Seasnake [59233]		Species or species habitat may occur within area
<a href="#">Hydrophis elegans</a> Elegant Seasnake [1104]		Species or species habitat may occur within area
<a href="#">Hydrophis gracilis</a> Slender Seasnake [1106]		Species or species habitat may occur within area
<a href="#">Hydrophis inornatus</a> Plain Seasnake [1107]		Species or species habitat may occur within area
<a href="#">Hydrophis mcdowellii</a> null [25926]		Species or species habitat may occur within area
<a href="#">Hydrophis melanosoma</a> Black-banded Robust Seasnake [1109]		Species or species habitat may occur within area
<a href="#">Hydrophis ornatus</a> Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
<a href="#">Hydrophis pacificus</a> Large-headed Seasnake, Pacific Seasnake [1112]		Species or species habitat may occur within area
<a href="#">Hydrophis vorisi</a> a seasnake [25927]		Species or species

Name	Threatened	Type of Presence
<a href="#">Lapemis hardwickii</a> Spine-bellied Seasnake [1113]		habitat may occur within area  Species or species habitat may occur within area
<a href="#">Laticauda colubrina</a> a sea krait [1092]		Species or species habitat may occur within area
<a href="#">Laticauda laticaudata</a> a sea krait [1093]		Species or species habitat may occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
<a href="#">Parahydrophis mertoni</a> Northern Mangrove Seasnake [1090]		Species or species habitat may occur within area
<a href="#">Pelamis platurus</a> Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

## Whales and other Cetaceans [ [Resource Information](#) ]

Name	Status	Type of Presence
<b>Mammals</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Feresa attenuata</a> Pygmy Killer Whale [61]		Species or species habitat may occur within area
<a href="#">Globicephala macrorhynchus</a> Short-finned Pilot Whale [62]		Species or species habitat may occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
<a href="#">Kogia breviceps</a> Pygmy Sperm Whale [57]		Species or species habitat may occur within area
<a href="#">Kogia simus</a> Dwarf Sperm Whale [58]		Species or species habitat may occur within area



Name	Status	Type of Presence
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Orcaella brevirostris</a> Irrawaddy Dolphin [45]		Species or species habitat known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Peponocephala electra</a> Melon-headed Whale [47]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pseudorca crassidens</a> False Killer Whale [48]		Species or species habitat likely to occur within area
<a href="#">Sousa chinensis</a> Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Stenella coeruleoalba</a> Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
<a href="#">Stenella longirostris</a> Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
<a href="#">Steno bredanensis</a> Rough-toothed Dolphin [30]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area
<a href="#">Ziphius cavirostris</a> 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 Resources Audit, 2001.

Name	Status	Type of Presence
<b>Plants</b>		
Andropogon gayanus		
Gamba Grass [66895]		Species or species habitat likely to occur within area

### Nationally Important Wetlands [\[ Resource Information \]](#)

Name	State
<a href="#">Southern Gulf Aggregation</a>	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
<a href="#">Carbonate bank and terrace system of the Van</a>	North
<a href="#">Gulf of Carpentaria basin</a>	North
<a href="#">Gulf of Carpentaria coastal zone</a>	North
<a href="#">Pinnacles of the Bonaparte Basin</a>	North
<a href="#">Plateaux and saddle north-west of the Wellesley</a>	North
<a href="#">Shelf break and slope of the Arafura Shelf</a>	North
<a href="#">Submerged coral reefs of the Gulf of Carpentaria</a>	North
<a href="#">Tributary Canyons of the Arafura Depression</a>	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

# 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.

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

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



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[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](#).

<a href="#">World Heritage Properties:</a>	2
<a href="#">National Heritage Places:</a>	5
<a href="#">Wetlands of International Importance:</a>	2
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	2
<a href="#">Listed Threatened Ecological Communities:</a>	1
<a href="#">Listed Threatened Species:</a>	70
<a href="#">Listed Migratory Species:</a>	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.

<a href="#">Commonwealth Land:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	1
<a href="#">Listed Marine Species:</a>	149
<a href="#">Whales and Other Cetaceans:</a>	34
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	17

## Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<a href="#">State and Territory Reserves:</a>	10
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	23
<a href="#">Nationally Important Wetlands:</a>	3
<a href="#">Key Ecological Features (Marine)</a>	5

# Details

## Matters of National Environmental Significance

World Heritage Properties		[ Resource Information ]
Name	State	Status
<a href="#">Shark Bay, Western Australia</a>	WA	Declared property
<a href="#">The Ningaloo Coast</a>	WA	Declared property

National Heritage Properties		[ Resource Information ]
Name	State	Status
<b>Natural</b>		
<a href="#">Shark Bay, Western Australia</a>	WA	Listed place
<a href="#">The Ningaloo Coast</a>	WA	Listed place
<a href="#">The West Kimberley</a>	WA	Listed place
<b>Indigenous</b>		
<a href="#">Dampier Archipelago (including Burrup Peninsula)</a>	WA	Listed place
<b>Historic</b>		
<a href="#">Dirk Hartog Landing Site 1616 - Cape Inscription Area</a>	WA	Listed place

Wetlands of International Importance (Ramsar)		[ Resource Information ]
Name		Proximity
<a href="#">Eighty-mile beach</a>		Within Ramsar site
<a href="#">Ord river floodplain</a>		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
<a href="#">North-west</a>

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
<a href="#">Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula</a>	Endangered	Community likely to occur within area

Listed Threatened Species		[ Resource Information ]
Name	Status	Type of Presence
<b>Birds</b>		
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species

Name	Status	Type of Presence
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	habitat known to occur within area Species or species habitat known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Erythrura gouldiae</a> Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Falcunculus frontatus whitei</a> Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Geophaps smithii blaauwi</a> Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Limosa lapponica baueri</a> Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Malurus leucopterus leucopterus</a> 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
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Papasula abbotti</a> Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
<a href="#">Pezoporus occidentalis</a> Night Parrot [59350]	Endangered	Species or species habitat may occur within



Name	Status	Type of Presence area
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Tyto novaehollandiae kimberli</a> Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
<b>Mammals</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Bettongia lesueur lesueur</a> Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Bettongia penicillata ogilbyi</a> Woylie [66844]	Endangered	Species or species habitat likely to occur within area
<a href="#">Conilurus penicillatus</a> Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
<a href="#">Dasyurus geoffroii</a> Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
<a href="#">Dasyurus hallucatus</a> Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
<a href="#">Isodon auratus auratus</a> Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Lagostrophus fasciatus fasciatus</a> Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Translocated population known to occur within area
<a href="#">Leporillus conditor</a> Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Translocated population known to occur within area
<a href="#">Macroderma gigas</a> Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Macrotis lagotis</a> Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Breeding known to occur within area
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
<a href="#">Perameles bougainville bougainville</a> Western Barred Bandicoot (Shark Bay) [66631]	Endangered	Translocated population known to occur within area
<a href="#">Petrogale concinna monastria</a> Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
<a href="#">Phascogale tapoatafa kimberleyensis</a> Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Rhinonictes aurantia (Pilbara form)</a> Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat may occur within area
<a href="#">Saccolaimus saccolaimus nudicluniatus</a> Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Xeromys myoides</a> Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
<b>Reptiles</b>		
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Egernia stokesii badia</a> 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
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Lerista neviniae</a> Nevin's Slider [85296]	Endangered	Species or species habitat known to occur within area
<a href="#">Liasis olivaceus barroni</a> Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

## Sharks

<a href="#">Carcharias taurus (west coast population)</a> Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Glyphis garricki</a> Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
<a href="#">Rhincodon typus</a> 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
<b>Migratory Marine Birds</b>		
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardenna carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
<a href="#">Ardenna pacifica</a> Wedge-tailed Shearwater [84292]		Breeding known to occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species

Name	Threatened	Type of Presence
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	habitat likely to occur within area  Species or species habitat may occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
<a href="#">Hydroprogne caspia</a> Caspian Tern [808]		Breeding known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Onychoprion anaethetus</a> Bridled Tern [82845]		Breeding known to occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding likely to occur within area
<a href="#">Sternula albifrons</a> Little Tern [82849]		Breeding known to occur within area
<a href="#">Sula leucogaster</a> Brown Booby [1022]		Breeding known to occur within area
<a href="#">Sula sula</a> Red-footed Booby [1023]		Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Anoxypristis cuspidata</a> Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
<a href="#">Balaena glacialis australis</a> Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area



Name	Threatened	Type of Presence
<a href="#">Balaenoptera bonaerensis</a> Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Crocodylus porosus</a> Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Dugong dugon</a> Dugong [28]		Breeding known to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
<a href="#">Isurus oxyrinchus</a> Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
<a href="#">Isurus paucus</a> Longfin Mako [82947]		Species or species habitat likely to occur within area
<a href="#">Lamna nasus</a> Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Manta alfredi</a> 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
<a href="#">Manta birostris</a> 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
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Breeding known to occur

Name	Threatened	Type of Presence within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
<a href="#">Orcaella heinsohni</a> Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pristis clavata</a> Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
<a href="#">Pristis pristis</a> Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Sousa chinensis</a> Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Cecropis daurica</a> Red-rumped Swallow [80610]		Species or species habitat may occur within area
<a href="#">Cuculus optatus</a> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
<a href="#">Hirundo rustica</a> Barn Swallow [662]		Species or species habitat may occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat likely to occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Acrocephalus orientalis</a> Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat known to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
<a href="#">Glareola maldivarum</a> Oriental Pratincole [840]		Species or species habitat may occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Species or species habitat known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]		Species or species habitat known to occur within area
<a href="#">Thalasseus bergii</a> Greater Crested Tern [83000]		Breeding known to occur within area
<a href="#">Tringa brevipes</a> Grey-tailed Tattler [851]		Species or species habitat known to occur within area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
<a href="#">Xenus cinereus</a> 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		
<a href="#">Ningaloo Marine Area - Commonwealth Waters</a>	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		
<a href="#">Acrocephalus orientalis</a> Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Anseranas semipalmata</a> Magpie Goose [978]		Species or species habitat may occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Species or species



Name	Threatened	Type of Presence
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	habitat known to occur within area Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat known to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Catharacta skua</a> Great Skua [59472]		Species or species habitat may occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius ruficapillus</a> Red-capped Plover [881]		Species or species habitat known to occur within area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
<a href="#">Chrysococcyx osculans</a> Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
<a href="#">Glareola maldivarum</a> Oriental Pratincole [840]		Species or species habitat may occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<a href="#">Heteroscelus brevipes</a> Grey-tailed Tattler [59311]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
<a href="#">Himantopus himantopus</a> Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
<a href="#">Hirundo daurica</a> Red-rumped Swallow [59480]		Species or species habitat may occur within area
<a href="#">Hirundo rustica</a> Barn Swallow [662]		Species or species habitat may occur within area
<a href="#">Larus novaehollandiae</a> Silver Gull [810]		Breeding known to occur within area
<a href="#">Larus pacificus</a> Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]		Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat likely to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Species or species habitat known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area
<a href="#">Papasula abbotti</a> Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]		Species or species habitat known to occur within area
<a href="#">Pterodroma macroptera</a> Great-winged Petrel [1035]		Foraging, feeding or

Name	Threatened	Type of Presence
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	related behaviour known to occur within area
<a href="#">Puffinus assimilis</a> Little Shearwater [59363]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Puffinus pacificus</a> Wedge-tailed Shearwater [1027]		Species or species habitat likely to occur within area
<a href="#">Recurvirostra novaehollandiae</a> Red-necked Avocet [871]		Breeding known to occur within area
<a href="#">Rostratula benghalensis (sensu lato)</a> Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
<a href="#">Sterna albifrons</a> Little Tern [813]		Species or species habitat likely to occur within area
<a href="#">Sterna anaethetus</a> Bridled Tern [814]		Breeding known to occur within area
<a href="#">Sterna bengalensis</a> Lesser Crested Tern [815]		Breeding known to occur within area
<a href="#">Sterna bergii</a> Crested Tern [816]		Breeding known to occur within area
<a href="#">Sterna caspia</a> Caspian Tern [59467]		Breeding known to occur within area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Sterna fuscata</a> Sooty Tern [794]		Breeding likely to occur within area
<a href="#">Sterna nereis</a> Fairy Tern [796]		Breeding known to occur within area
<a href="#">Sula leucogaster</a> Brown Booby [1022]		Breeding known to occur within area
<a href="#">Sula sula</a> Red-footed Booby [1023]		Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Breeding known to occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Species or species habitat known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]		Species or species habitat known to occur within area
<b>Fish</b>		
<a href="#">Acentronura larsonae</a> Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
<a href="#">Bhanotia fasciolata</a> Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
<a href="#">Bulbonaricus brauni</a> Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
<a href="#">Campichthys galei</a> Gale's Pipefish [66191]		Species or species habitat may occur within area
<a href="#">Campichthys tricarinatus</a> Three-keel Pipefish [66192]		Species or species habitat may occur within area
<a href="#">Choeroichthys brachysoma</a> Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
<a href="#">Choeroichthys latispinosus</a> Muiron Island Pipefish [66196]		Species or species habitat may occur within area
<a href="#">Choeroichthys suillus</a> Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
<a href="#">Corythoichthys amplexus</a> Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
<a href="#">Corythoichthys flavofasciatus</a> Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
<a href="#">Corythoichthys intestinalis</a> Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
<a href="#">Corythoichthys schultzi</a> Schultz's Pipefish [66205]		Species or species habitat may occur within area
<a href="#">Cosmocampus banneri</a> Roughridge Pipefish [66206]		Species or species habitat may occur within area
<a href="#">Doryrhamphus dactyliophorus</a> Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Doryrhamphus excisus</a> Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
<a href="#">Doryrhamphus janssi</a> Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
<a href="#">Doryrhamphus multiannulatus</a> Many-banded Pipefish [66717]		Species or species habitat may occur within area
<a href="#">Doryrhamphus negrosensis</a> Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
<a href="#">Festucalex scalaris</a> Ladder Pipefish [66216]		Species or species habitat may occur within area
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area
<a href="#">Halicampus brocki</a> Brock's Pipefish [66219]		Species or species habitat may occur within area
<a href="#">Halicampus dunckeri</a> Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
<a href="#">Halicampus nitidus</a> Glittering Pipefish [66224]		Species or species habitat may occur within area
<a href="#">Halicampus spinirostris</a> Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
<a href="#">Haliichthys taeniophorus</a> Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
<a href="#">Hippocampus histrix</a> Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area
<a href="#">Hippocampus spinosissimus</a> Hedgehog Seahorse [66239]		Species or species habitat may occur within area



Name	Threatened	Type of Presence
<a href="#">Hippocampus trimaculatus</a> Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
<a href="#">Lissocampus fatiloquus</a> Prophet's Pipefish [66250]		Species or species habitat may occur within area
<a href="#">Micrognathus micronotopterus</a> Tidepool Pipefish [66255]		Species or species habitat may occur within area
<a href="#">Nannocampus subosseus</a> Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
<a href="#">Phoxocampus belcheri</a> Black Rock Pipefish [66719]		Species or species habitat may occur within area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
<a href="#">Stigmatopora argus</a> Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus longirostris</a> Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
<b>Mammals</b>		
<a href="#">Dugong dugon</a> Dugong [28]		Breeding known to occur within area
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
<b>Reptiles</b>		
<a href="#">Acalyptophis peronii</a> Horned Seasnake [1114]		Species or species habitat may occur within area
<a href="#">Aipysurus apraefrontalis</a> Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Aipysurus duboisii</a> Dubois' Seasnake [1116]		Species or species habitat may occur within area
<a href="#">Aipysurus eydouxii</a> Spine-tailed Seasnake [1117]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Aipysurus foliosquama</a> Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Aipysurus laevis</a> Olive Seasnake [1120]		Species or species habitat may occur within area
<a href="#">Aipysurus pooleorum</a> Shark Bay Seasnake [66061]		Species or species habitat may occur within area
<a href="#">Aipysurus tenuis</a> Brown-lined Seasnake [1121]		Species or species habitat may occur within area
<a href="#">Astrotia stokesii</a> Stokes' Seasnake [1122]		Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Crocodylus johnstoni</a> Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
<a href="#">Crocodylus porosus</a> Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area
<a href="#">Disteira major</a> Olive-headed Seasnake [1124]		Species or species habitat may occur within area
<a href="#">Emydocephalus annulatus</a> Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
<a href="#">Enhydrina schistosa</a> Beaked Seasnake [1126]		Species or species habitat may occur within area
<a href="#">Ephalophis greyi</a> North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
<a href="#">Hydrelaps darwiniensis</a> Black-ringed Seasnake [1100]		Species or species habitat may occur within area
<a href="#">Hydrophis atriceps</a> Black-headed Seasnake [1101]		Species or species habitat may occur within area
<a href="#">Hydrophis coggeri</a> Slender-necked Seasnake [25925]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Hydrophis czeblukovi</a> Fine-spined Seasnake [59233]		Species or species habitat may occur within area
<a href="#">Hydrophis elegans</a> Elegant Seasnake [1104]		Species or species habitat may occur within area
<a href="#">Hydrophis inornatus</a> Plain Seasnake [1107]		Species or species habitat may occur within area
<a href="#">Hydrophis mcdowelli</a> null [25926]		Species or species habitat may occur within area
<a href="#">Hydrophis ornatus</a> Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
<a href="#">Lapemis hardwickii</a> Spine-bellied Seasnake [1113]		Species or species habitat may occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
<a href="#">Pelamis platurus</a> Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

## Whales and other Cetaceans

[ [Resource Information](#) ]

Name	Status	Type of Presence
<b>Mammals</b>		
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area
<a href="#">Balaenoptera bonaerensis</a> Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Feresa attenuata</a> Pygmy Killer Whale [61]		Species or species habitat may occur within



Name	Status	Type of Presence area
<a href="#">Globicephala macrorhynchus</a> Short-finned Pilot Whale [62]		Species or species habitat may occur within area
<a href="#">Globicephala melas</a> Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
<a href="#">Indopacetus pacificus</a> Longman's Beaked Whale [72]		Species or species habitat may occur within area
<a href="#">Kogia breviceps</a> Pygmy Sperm Whale [57]		Species or species habitat may occur within area
<a href="#">Kogia simus</a> Dwarf Sperm Whale [58]		Species or species habitat may occur within area
<a href="#">Lagenodelphis hosei</a> Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Breeding known to occur within area
<a href="#">Mesoplodon densirostris</a> Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
<a href="#">Mesoplodon ginkgodens</a> Ginkgo-toothed Beaked Whale, Ginkgo-toothed Whale, Ginkgo Beaked Whale [59564]		Species or species habitat may occur within area
<a href="#">Mesoplodon grayi</a> Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
<a href="#">Orcaella brevirostris</a> Irrawaddy Dolphin [45]		Species or species habitat known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Peponocephala electra</a> Melon-headed Whale [47]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Species or species habitat may occur within area
<a href="#">Pseudorca crassidens</a> False Killer Whale [48]		Species or species habitat likely to occur within area
<a href="#">Sousa chinensis</a> Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Stenella coeruleoalba</a> Striped Dolphin, Euphrosyne Dolphin [52]		Species or species

Name	Status	Type of Presence
<a href="#">Stenella longirostris</a> Long-snouted Spinner Dolphin [29]		habitat may occur within area  Species or species habitat may occur within area
<a href="#">Steno bredanensis</a> Rough-toothed Dolphin [30]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops aduncus (Arafura/Timor Sea populations)</a> Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area
<a href="#">Ziphius cavirostris</a> 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 Resources Audit, 2001.

Name	Status	Type of Presence
<b>Birds</b>		
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
<b>Frogs</b>		
Rhinella marina Cane Toad [83218]		Species or species habitat may occur within area
<b>Mammals</b>		
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
<b>Plants</b>		
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
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		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 likely to 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
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#### Nationally Important Wetlands

[ [Resource Information](#) ]

Name	State
<a href="#">Exmouth Gulf East</a>	WA
<a href="#">Hamelin Pool</a>	WA
<a href="#">Shark Bay East</a>	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
<a href="#">Carbonate bank and terrace system of the Sahul</a>	North-west
<a href="#">Commonwealth waters adjacent to Ningaloo Reef</a>	North-west
<a href="#">Continental Slope Demersal Fish Communities</a>	North-west
<a href="#">Pinnacles of the Bonaparte Basin</a>	North-west
<a href="#">Wallaby Saddle</a>	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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- [-Office of Environment and Heritage, New South Wales](#)
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- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
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- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
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- [-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](#)
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- [-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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# 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

[Summary](#)

[Details](#)

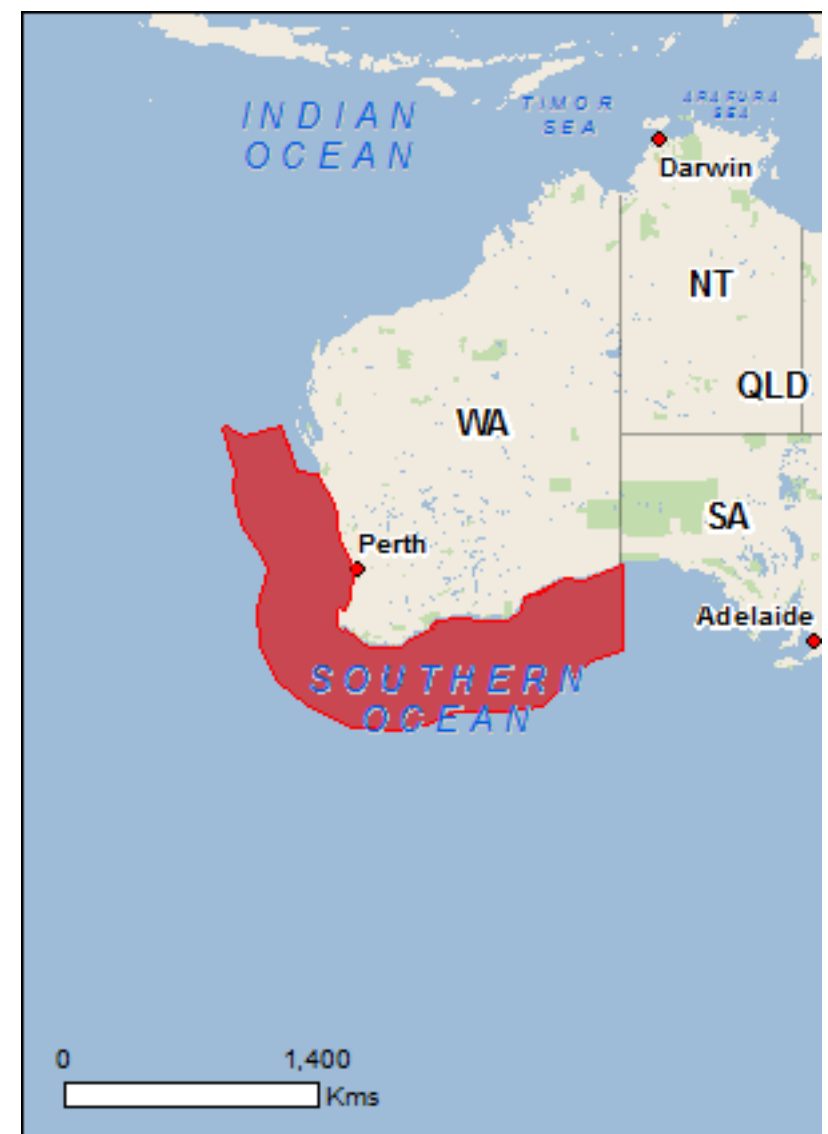
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

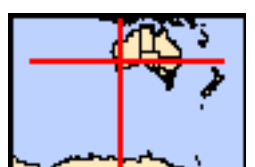
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[Coordinates](#)

[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](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	1
<a href="#">Wetlands of International Importance:</a>	4
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	2
<a href="#">Listed Threatened Ecological Communities:</a>	3
<a href="#">Listed Threatened Species:</a>	65
<a href="#">Listed Migratory Species:</a>	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.

<a href="#">Commonwealth Land:</a>	2
<a href="#">Commonwealth Heritage Places:</a>	1
<a href="#">Listed Marine Species:</a>	106
<a href="#">Whales and Other Cetaceans:</a>	40
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	21

## Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<a href="#">State and Territory Reserves:</a>	10
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	42
<a href="#">Nationally Important Wetlands:</a>	None
<a href="#">Key Ecological Features (Marine)</a>	8



# Details

## Matters of National Environmental Significance

National Heritage Properties		[ Resource Information ]
Name	State	Status
Indigenous		
<a href="#">Cheetup Rock Shelter</a>	WA	Listed place

Wetlands of International Importance (Ramsar)		[ Resource Information ]
Name	Proximity	
<a href="#">Becher point wetlands</a>	Within 10km of Ramsar	
<a href="#">Forrestdale and thomsons lakes</a>	Within 10km of Ramsar	
<a href="#">Peel-yalgorup system</a>	Within 10km of Ramsar	
<a href="#">Vasse-wonnerup system</a>	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
<a href="#">South-west</a>

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
<a href="#">Banksia Woodlands of the Swan Coastal Plain ecological community</a>	Endangered	Community may occur within area
<a href="#">Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia</a>	Endangered	Community may occur within area
<a href="#">Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community</a>	Critically Endangered	Community likely to occur within area

Listed Threatened Species	[ Resource Information ]	
Name	Status	Type of Presence
Birds		
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Atrichornis clamosus</a> Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calyptorhynchus banksii naso</a> Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Calyptorhynchus latirostris</a> Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
<a href="#">Cereopsis novaehollandiae grisea</a> Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Halobaena caerulea</a> Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
<a href="#">Leipoa ocellata</a> Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel	Endangered	Species or species

Name	Status	Type of Presence
[1060]		habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pezoporus flaviventris</a> Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Phoebetria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche chrysostoma</a> Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<b>Mammals</b>		
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Bettongia penicillata ogilbyi</a> Woylie [66844]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence area
<a href="#">Dasyurus geoffroii</a> Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
<a href="#">Parantechinus apicalis</a> Dibbler [313]	Endangered	Species or species habitat known to occur within area
<a href="#">Petrogale lateralis hacketti</a> Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Potorous gilbertii</a> Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Translocated population known to occur within area
<a href="#">Pseudocheirus occidentalis</a> Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Setonix brachyurus</a> Quokka [229]	Vulnerable	Species or species habitat known to occur within area
<b>Plants</b>		
<a href="#">Caladenia elegans</a> Elegant Spider-orchid [56775]	Endangered	Species or species habitat may occur within area
<a href="#">Caladenia granitora</a> [65292]	Endangered	Species or species habitat may occur within area
<a href="#">Caladenia hoffmanii</a> Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
<a href="#">Diuris micrantha</a> Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Drummondita ericoides</a> Morseby Range Drummondita [9193]	Endangered	Species or species habitat likely to occur within area
<a href="#">Eucalyptus insularis</a> Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
<a href="#">Isopogon uncinatus</a> Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
<b>Reptiles</b>		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area



Name	Status	Type of Presence
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Egernia stokesii badia</a> Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area
<a href="#">Liopholis pulchra longicauda</a> Jurien Bay Skink, Jurien Bay Rock-skink [83162]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

#### Sharks

<a href="#">Carcharias taurus (west coast population)</a> Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Rhincodon typus</a> 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
<b>Migratory Marine Birds</b>		
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardenna carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
<a href="#">Ardenna grisea</a> Sooty Shearwater [82651]		Species or species habitat may occur within area
<a href="#">Ardenna pacifica</a> Wedge-tailed Shearwater [84292]		Breeding known to occur within area
<a href="#">Ardenna tenuirostris</a> Short-tailed Shearwater [82652]		Breeding known to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
<a href="#">Hydroprogne caspia</a> Caspian Tern [808]		Breeding known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Onychoprion anaethetus</a> Bridled Tern [82845]		Breeding known to occur within area
<a href="#">Phoebetria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche chrysostoma</a> Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Balaena glacialis australis</a> Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
<a href="#">Balaenoptera bonaerensis</a> Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Isurus oxyrinchus</a> Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
<a href="#">Isurus paucus</a> Longfin Mako [82947]		Species or species habitat likely to occur within area
<a href="#">Lagenorhynchus obscurus</a> Dusky Dolphin [43]		Species or species habitat likely to occur within area
<a href="#">Lamna nasus</a> Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
<a href="#">Manta alfredi</a> 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
<a href="#">Manta birostris</a> 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
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species



Name	Threatened	Type of Presence
<b>Migratory Terrestrial Species</b>		
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		habitat may occur within area  Species or species habitat may occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
<a href="#">Glareola maldivarum</a> Oriental Pratincole [840]		Species or species habitat known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area
<a href="#">Thalasseus bergii</a> Greater Crested Tern [83000]		Breeding known to occur within area
<a href="#">Tringa brevipes</a> Grey-tailed Tattler [851]		Species or species habitat known to occur

Name	Threatened	Type of Presence within area
<a href="#">Tringa nebularia</a> 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 <a href="#">Garden Island</a>	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		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Anous tenuirostris melanops</a> Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Species or species habitat known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Species or species

Name	Threatened	Type of Presence
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	habitat known to occur within area Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Catharacta skua</a> Great Skua [59472]		Species or species habitat may occur within area
<a href="#">Cereopsis novaehollandiae grisea</a> Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
<a href="#">Charadrius ruficapillus</a> Red-capped Plover [881]		Species or species habitat known to occur within area
<a href="#">Chrysococcyx osculans</a> Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
<a href="#">Diomedea amsterdamensis</a> Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea dabbenena</a> Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Eudyptula minor</a> Little Penguin [1085]		Breeding known to occur within area

Name	Threatened	Type of Presence
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
<a href="#">Glareola maldivarum</a> Oriental Pratincole [840]		Species or species habitat known to occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<a href="#">Halobaena caerulea</a> Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
<a href="#">Heteroscelus brevipes</a> Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
<a href="#">Larus novaehollandiae</a> Silver Gull [810]		Breeding known to occur within area
<a href="#">Larus pacificus</a> Pacific Gull [811]		Breeding known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<a href="#">Motacilla cinerea</a> Grey Wagtail [642]		Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area
<a href="#">Pelagodroma marina</a> White-faced Storm-Petrel [1016]		Breeding known to occur within area
<a href="#">Phalacrocorax fuscescens</a> Black-faced Cormorant [59660]		Breeding known to occur within area
<a href="#">Phoebastria fusca</a> Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pterodroma macroptera</a> Great-winged Petrel [1035]		Breeding known to occur within area
<a href="#">Pterodroma mollis</a> Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely

Name	Threatened	Type of Presence
<a href="#">Puffinus assimilis</a> Little Shearwater [59363]		to occur within area  Breeding known to occur within area
<a href="#">Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Breeding known to occur within area
<a href="#">Puffinus griseus</a> Sooty Shearwater [1024]		Species or species habitat may occur within area
<a href="#">Puffinus pacificus</a> Wedge-tailed Shearwater [1027]		Breeding known to occur within area
<a href="#">Puffinus tenuirostris</a> Short-tailed Shearwater [1029]		Breeding known to occur within area
<a href="#">Rostratula benghalensis (sensu lato)</a> Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
<a href="#">Sterna anaethetus</a> Bridled Tern [814]		Breeding known to occur within area
<a href="#">Sterna bergii</a> Crested Tern [816]		Breeding known to occur within area
<a href="#">Sterna caspia</a> Caspian Tern [59467]		Breeding known to occur within area
<a href="#">Sterna dougallii</a> Roseate Tern [817]		Breeding known to occur within area
<a href="#">Sterna fuscata</a> Sooty Tern [794]		Breeding known to occur within area
<a href="#">Sterna nereis</a> Fairy Tern [796]		Breeding known to occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche chrysostoma</a> Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thinornis rubricollis</a> Hooded Plover [59510]		Species or species habitat known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Fish



Name	Threatened	Type of Presence
<a href="#">Acentronura australe</a> Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
<a href="#">Campichthys galei</a> Gale's Pipefish [66191]		Species or species habitat may occur within area
<a href="#">Choeroichthys suillus</a> Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
<a href="#">Halicampus brocki</a> Brock's Pipefish [66219]		Species or species habitat may occur within area
<a href="#">Heraldia nocturna</a> Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
<a href="#">Hippocampus angustus</a> Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
<a href="#">Hippocampus breviceps</a> Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
<a href="#">Hippocampus subelongatus</a> West Australian Seahorse [66722]		Species or species habitat may occur within area
<a href="#">Histiogamphelus cristatus</a> Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
<a href="#">Leptoichthys fistularius</a> Brushtail Pipefish [66248]		Species or species habitat may occur within area
<a href="#">Lissocampus caudalis</a> Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
<a href="#">Lissocampus fatiloquus</a> Prophet's Pipefish [66250]		Species or species habitat may occur within area
<a href="#">Lissocampus runa</a> Javelin Pipefish [66251]		Species or species habitat may occur within area
<a href="#">Maroubra perserrata</a> Sawtooth Pipefish [66252]		Species or species habitat may occur within area
<a href="#">Mitotichthys meraculus</a> Western Crested Pipefish [66259]		Species or species habitat may occur within area
<a href="#">Nannocampus subosseus</a> Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
<a href="#">Notiocampus ruber</a> Red Pipefish [66265]		Species or species habitat may occur within area
<a href="#">Phycodurus eques</a> Leafy Seadragon [66267]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
<a href="#">Phyllopteryx taeniolatus</a> Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
<a href="#">Pugnaso curtirostris</a> Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
<a href="#">Solegnathus lettiensis</a> Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
<a href="#">Stigmatopora argus</a> Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
<a href="#">Stigmatopora nigra</a> Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
<a href="#">Urocampus carinirostris</a> Hairy Pipefish [66282]		Species or species habitat may occur within area
<a href="#">Vanacampus margaritifer</a> Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
<a href="#">Vanacampus phillipi</a> Port Phillip Pipefish [66284]		Species or species habitat may occur within area
<a href="#">Vanacampus poecilolaemus</a> Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
<b>Mammals</b>		
<a href="#">Arctocephalus forsteri</a> Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area
<a href="#">Neophoca cinerea</a> Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
<b>Reptiles</b>		
<a href="#">Aipysurus laevis</a> Olive Seasnake [1120]		Species or species habitat may occur within area
<a href="#">Aipysurus pooleorum</a> Shark Bay Seasnake [66061]		Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Disteira kingii</a> Spectacled Seasnake [1123]		Species or species habitat may occur within area



Name	Threatened	Type of Presence
<a href="#">Disteira major</a> Olive-headed Seasnake [1124]		Species or species habitat may occur within area
<a href="#">Ephalophis greyi</a> North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Pelamis platurus</a> Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

## Whales and other Cetaceans [ Resource Information ]

Name	Status	Type of Presence
<b>Mammals</b>		
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area
<a href="#">Balaenoptera bonaerensis</a> Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera borealis</a> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat likely to occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Migration route known to occur within area
<a href="#">Balaenoptera physalus</a> Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Berardius arnuxii</a> Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Breeding known to occur within area
<a href="#">Feresa attenuata</a> Pygmy Killer Whale [61]		Species or species habitat may occur within area
<a href="#">Globicephala macrorhynchus</a> Short-finned Pilot Whale [62]		Species or species habitat may occur within area
<a href="#">Globicephala melas</a> Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within

Name	Status	Type of Presence area
<a href="#">Hyperoodon planifrons</a> Southern Bottlenose Whale [71]		Species or species habitat may occur within area
<a href="#">Kogia breviceps</a> Pygmy Sperm Whale [57]		Species or species habitat may occur within area
<a href="#">Kogia simus</a> Dwarf Sperm Whale [58]		Species or species habitat may occur within area
<a href="#">Lagenodelphis hosei</a> Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
<a href="#">Lagenorhynchus obscurus</a> Dusky Dolphin [43]		Species or species habitat likely to occur within area
<a href="#">Lissodelphis peronii</a> Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Mesoplodon bowdoini</a> Andrew's Beaked Whale [73]		Species or species habitat may occur within area
<a href="#">Mesoplodon densirostris</a> Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
<a href="#">Mesoplodon ginkgodens</a> Ginkgo-toothed Beaked Whale, Ginkgo-toothed Whale, Ginkgo Beaked Whale [59564]		Species or species habitat may occur within area
<a href="#">Mesoplodon grayi</a> Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
<a href="#">Mesoplodon hectori</a> Hector's Beaked Whale [76]		Species or species habitat may occur within area
<a href="#">Mesoplodon layardii</a> Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
<a href="#">Mesoplodon mirus</a> True's Beaked Whale [54]		Species or species habitat may occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Peponocephala electra</a> Melon-headed Whale [47]		Species or species habitat may occur within area
<a href="#">Physeter macrocephalus</a> Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
<a href="#">Pseudorca crassidens</a> False Killer Whale [48]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Stenella coeruleoalba</a> Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
<a href="#">Stenella longirostris</a> Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
<a href="#">Steno bredanensis</a> Rough-toothed Dolphin [30]		Species or species habitat may occur within area
<a href="#">Tasmacetus shepherdi</a> Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area
<a href="#">Ziphius cavirostris</a> 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
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#### Birds

<p><i>Acridotheres tristis</i> Common Myna, Indian Myna [387]</p>		Species or species habitat likely to occur within area
<p><i>Anas platyrhynchos</i> Mallard [974]</p>		Species or species habitat likely to occur within area
<p><i>Carduelis carduelis</i> European Goldfinch [403]</p>		Species or species habitat likely to occur within area
<p><i>Columba livia</i> Rock Pigeon, Rock Dove, Domestic Pigeon [803]</p>		Species or species habitat likely to occur within area
<p><i>Passer domesticus</i> House Sparrow [405]</p>		Species or species habitat likely to occur within area
<p><i>Passer montanus</i> Eurasian Tree Sparrow [406]</p>		Species or species habitat likely to occur within area
<p><i>Streptopelia chinensis</i> Spotted Turtle-Dove [780]</p>		Species or species habitat likely to occur within area
<p><i>Streptopelia senegalensis</i> Laughing Turtle-dove, Laughing Dove [781]</p>		Species or species habitat likely to occur within area
<p><i>Sturnus vulgaris</i> Common Starling [389]</p>		Species or species habitat likely to occur within area
<p><i>Turdus merula</i> Common Blackbird, Eurasian Blackbird [596]</p>		Species or species habitat likely to occur within area

#### Mammals

<p><i>Bos taurus</i> Domestic Cattle [16]</p>		Species or species habitat likely to occur within area
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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
<b>Plants</b>		
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] 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
<b>Reptiles</b>		
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
<a href="#">Ancient coastline at 90-120m depth</a>	South-west
<a href="#">Commonwealth marine environment surrounding</a>	South-west
<a href="#">Commonwealth marine environment within and</a>	South-west
<a href="#">Commonwealth marine environment within and</a>	South-west
<a href="#">Diamantina Fracture Zone</a>	South-west
<a href="#">Naturaliste Plateau</a>	South-west
<a href="#">Western demersal slope and associated fish</a>	South-west
<a href="#">Western rock lobster</a>	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](#)

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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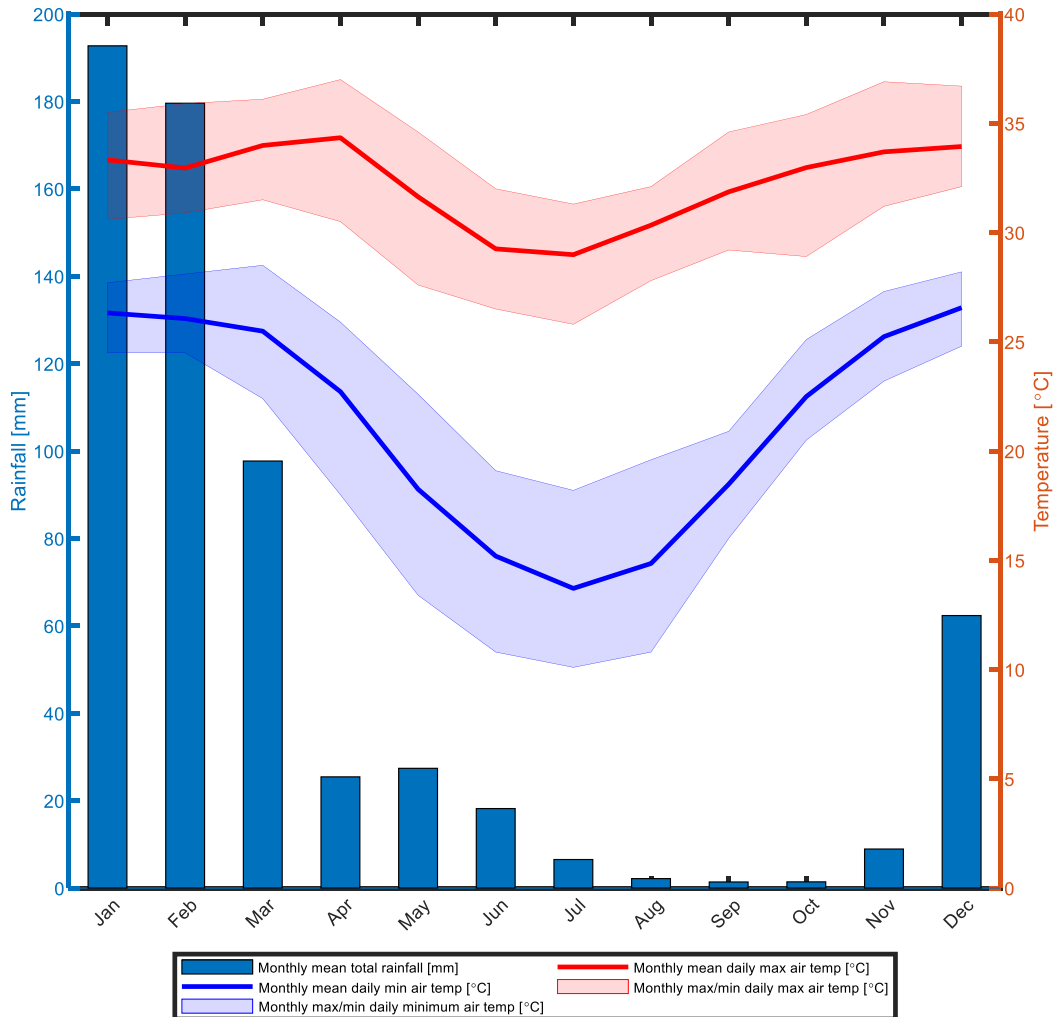
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Canberra City ACT 2601 Australia

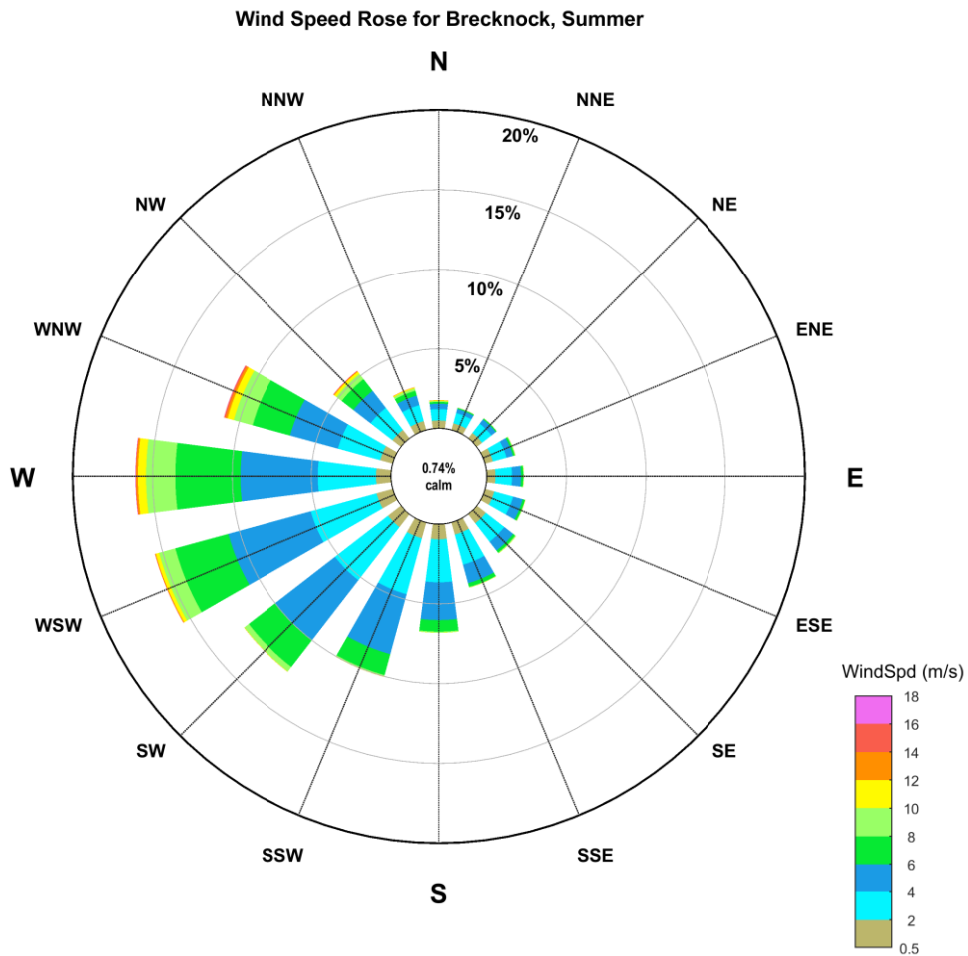
+61 2 6274 1111

## APPENDIX B. SUPPORTING FIGURES FOR SECTION 2.3 METEOROLOGY AND OCEANOGRAPHY

### Browse



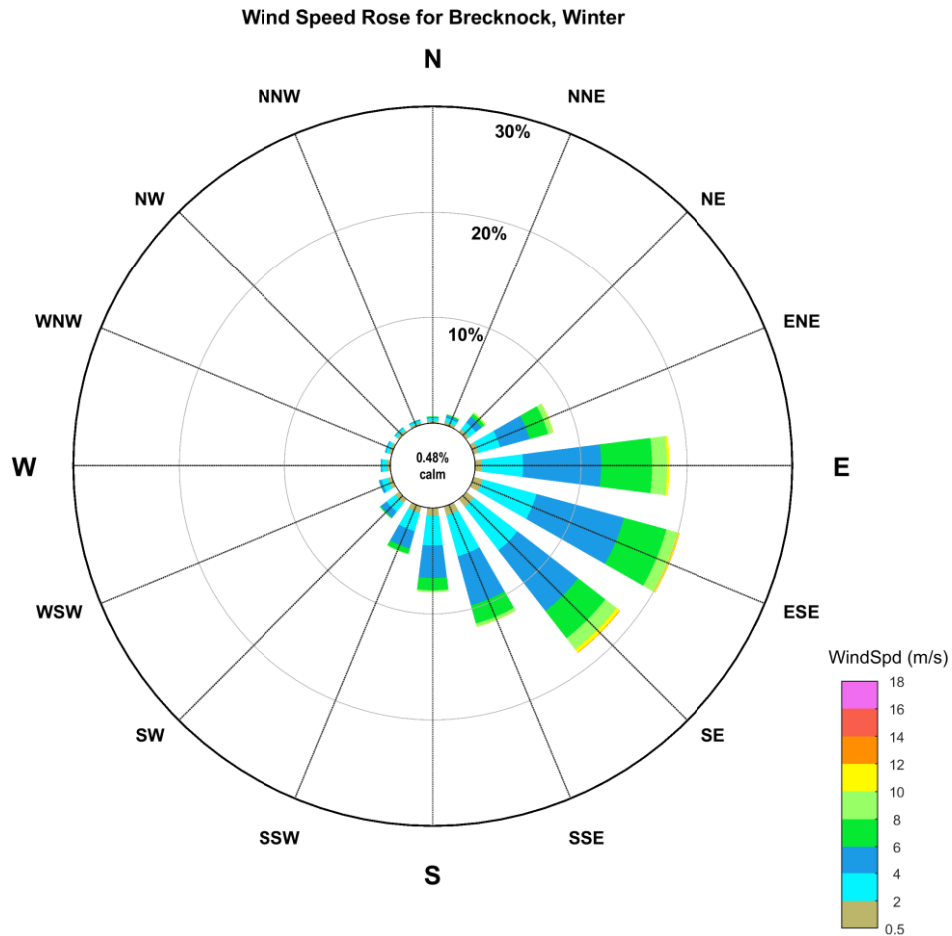
**Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.**




<p><b>Data Information:</b>                  Project: Browse                  Location: Brecknock [121.6500°E, 14.5300°S]                  Data Period: Summer (01-Jan-1979 to 01-Jan-2019)                  Data Source: Modelled Hindcast                  Record Elevation: 10 m AMSL                  Local Water Depth (m): 560                  Data Summary: Summer                  Number of Records: 164812                  Missing Data (%): 5.80                  Calm (% &lt; 0.50m/s): 0.74                  Measurement Format: 10-minute avg.</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Wind Speed: 20.60 m/s                  Mean Wind Speed: 4.55 m/s                  StdDev. Wind Speed: 2.31 m/s</p>
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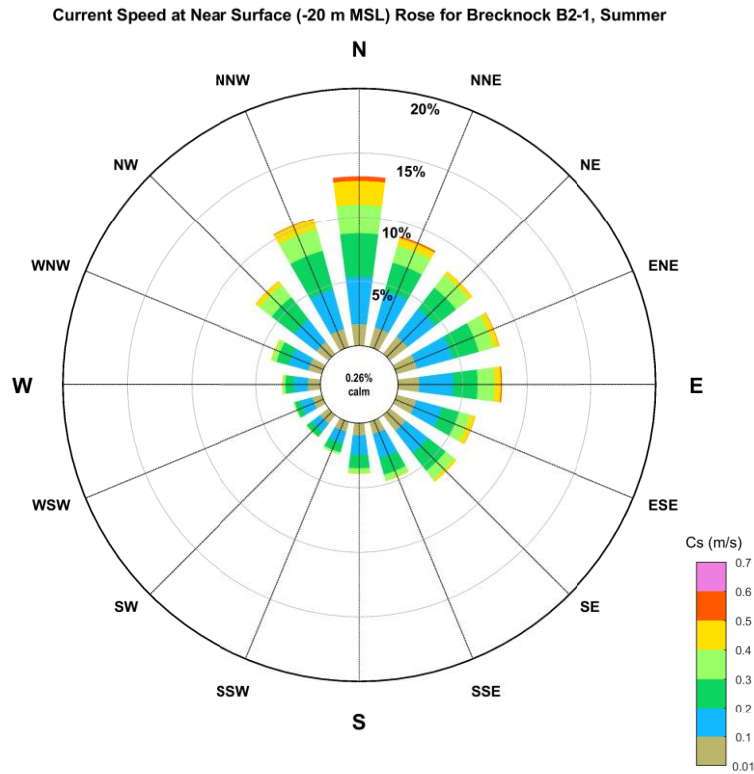


**Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West Monsoon (WEL, 2019).**



<p><b>Data Information:</b>                  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 (% &lt; 0.50m/s): 0.48                  Measurement Format: 10-minute avg.</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Wind Speed: 14.34 m/s                  Mean Wind Speed: 4.71 m/s                  StdDev. Wind Speed: 2.01 m/s</p> 
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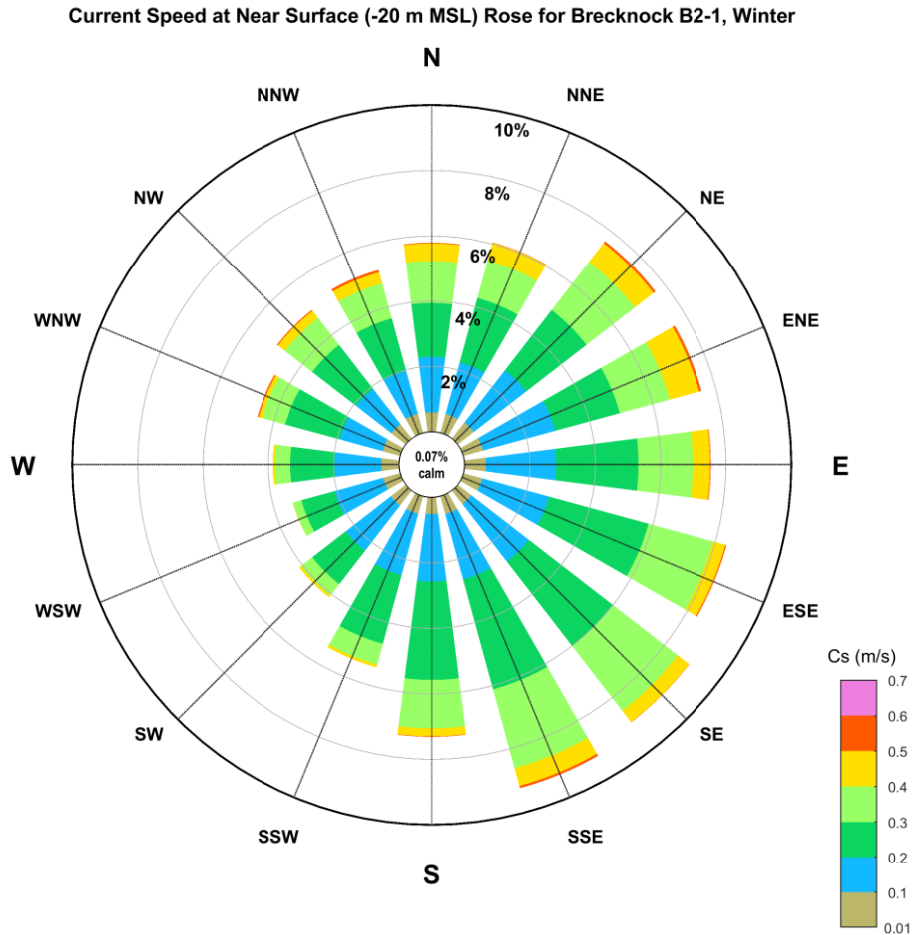
**Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in winter are predominantly from the E to SE due to the South East Trade Winds coming from the Australian mainland (WEL, 2019).**




<p><b>Data Information:</b>                  Project: Browse                  Location: Brecknock B2-1 [121.5700°E, 14.5100°S]                  Data Period: Summer (01-Oct-2006 to 31-Mar-2007)                  Data Source: CM04 Measured                  Record Elevation: Near Surface (-20 m MSL)                  Local Water Depth (m): 560                  Data Summary: Summer                  Number of Records: 243472                  Missing Data (%): 7.10                  Calm (% &lt; 0.01m/s): 0.26</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Curr Spd: 0.63 m/s                  Mean Curr Spd: 0.20 m/s                  StdDev. Curr Spd: 0.11 m/s</p>
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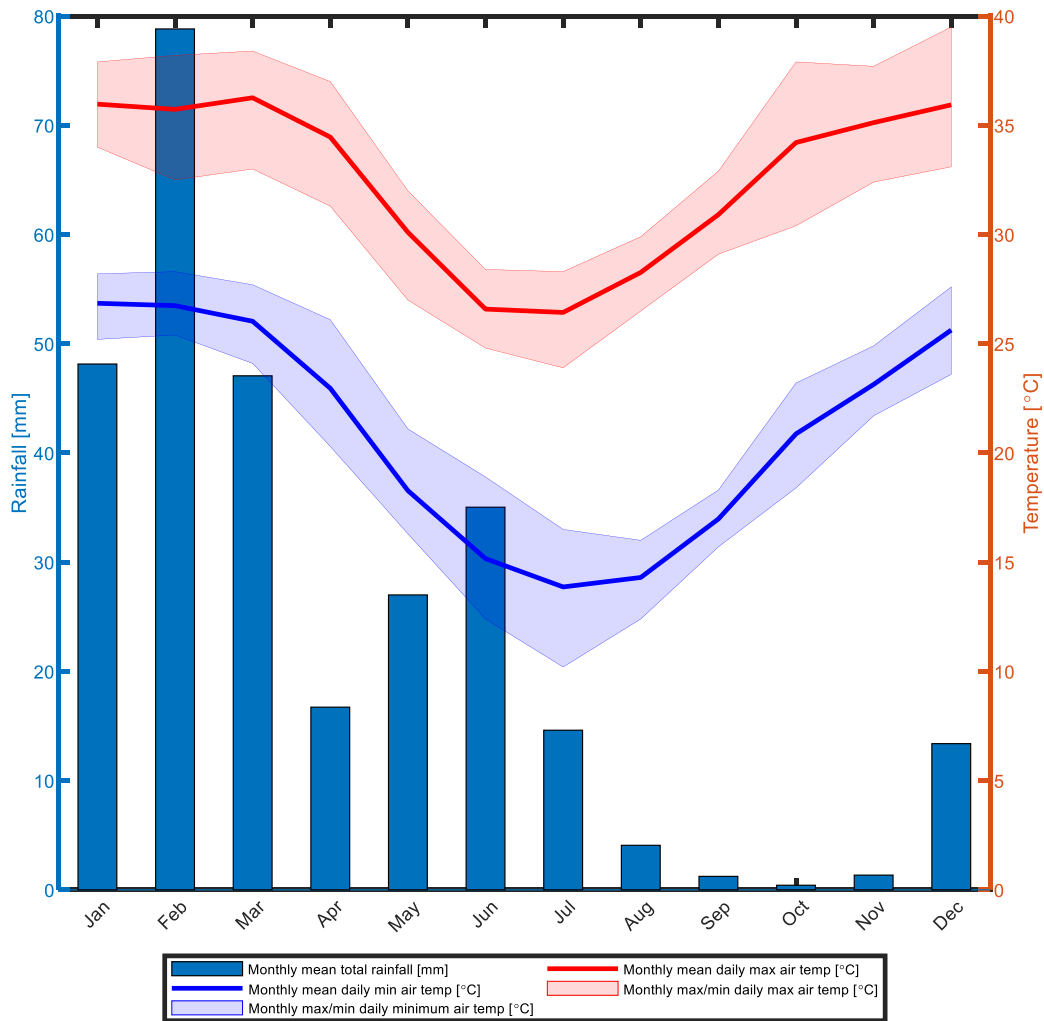
**Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).**



<p><b>Data Information:</b>                  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 (% &lt; 0.01m/s): 0.07</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Curr Spd: 0.62 m/s                  Mean Curr Spd: 0.24 m/s                  StdDev. Curr Spd: 0.10 m/s</p>
	

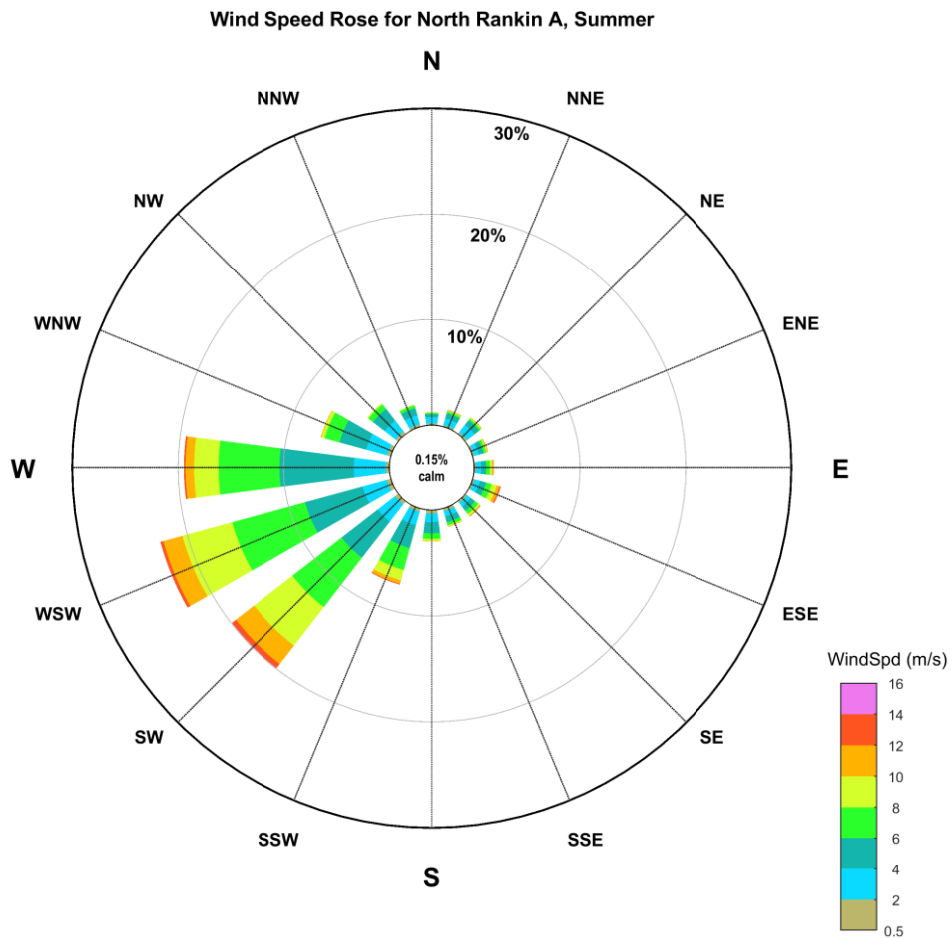
**Figure 5. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).**


## North-west Shelf/Scarborough



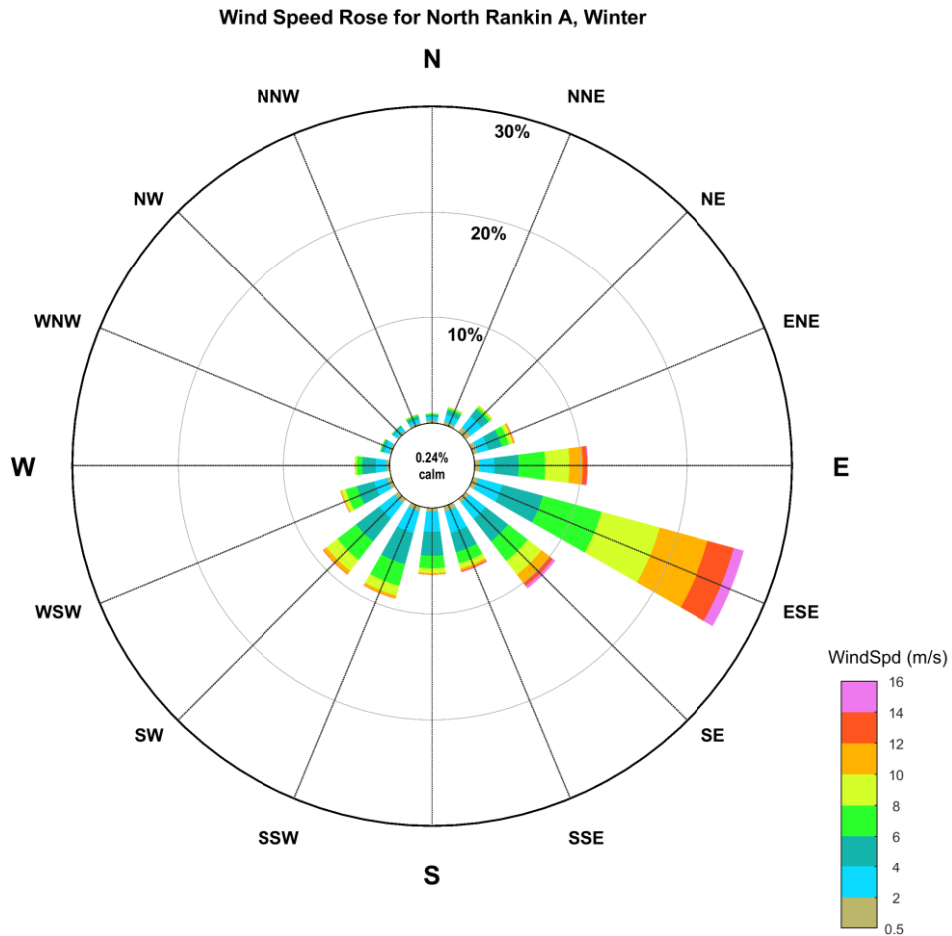
**Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote 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.**






<p><b>Data Information:</b>                  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 (% &lt; 0.50m/s): 0.15                  Measurement Format: 10-minute avg.</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Wind Speed: 18.50 m/s                  Mean Wind Speed: 6.04 m/s                  StdDev. Wind Speed: 2.55 m/s</p> 
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**Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by W to SW driven by the North West Monsoon (RPS, 2016).**

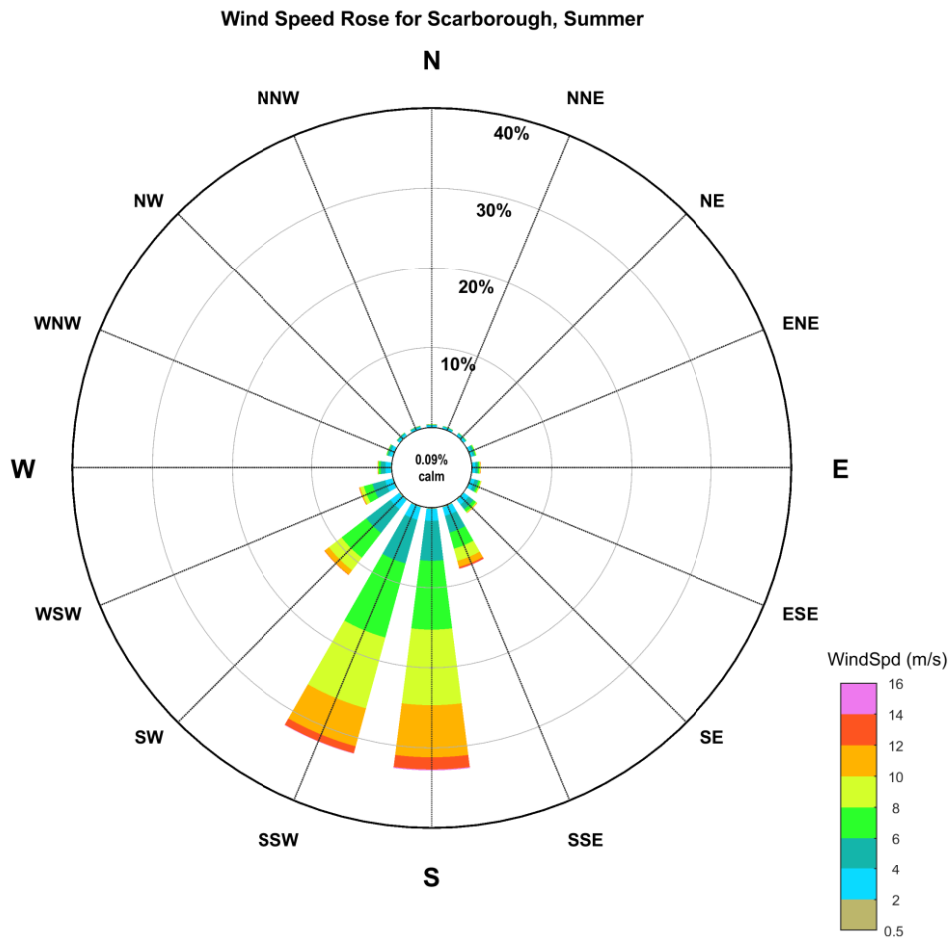


<p><b>Data Information:</b>                  Project: North West Shelf                  Location: North Rankin A [116.1200°E, 19.6100°S]                  Data Period: Winter (22-Jun-1995 to 30-Sep-2015)                  Data Source: Measured Winds                  Record Elevation: 10 m AMSL                  Local Water Depth (m): 125                  Data Summary: Winter                  Number of Records: 673213                  Missing Data (%): 4.43                  Calm (% &lt; 0.50m/s): 0.24                  Measurement Format: 10-minute avg.</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Wind Speed: 24.23 m/s                  Mean Wind Speed: 6.25 m/s                  StdDev. Wind Speed: 3.16 m/s</p>
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**Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin in winter are predominantly influenced by the South East Trade Winds over Australia (RPS, 2016).**

## Scarborough



**Data Information:**

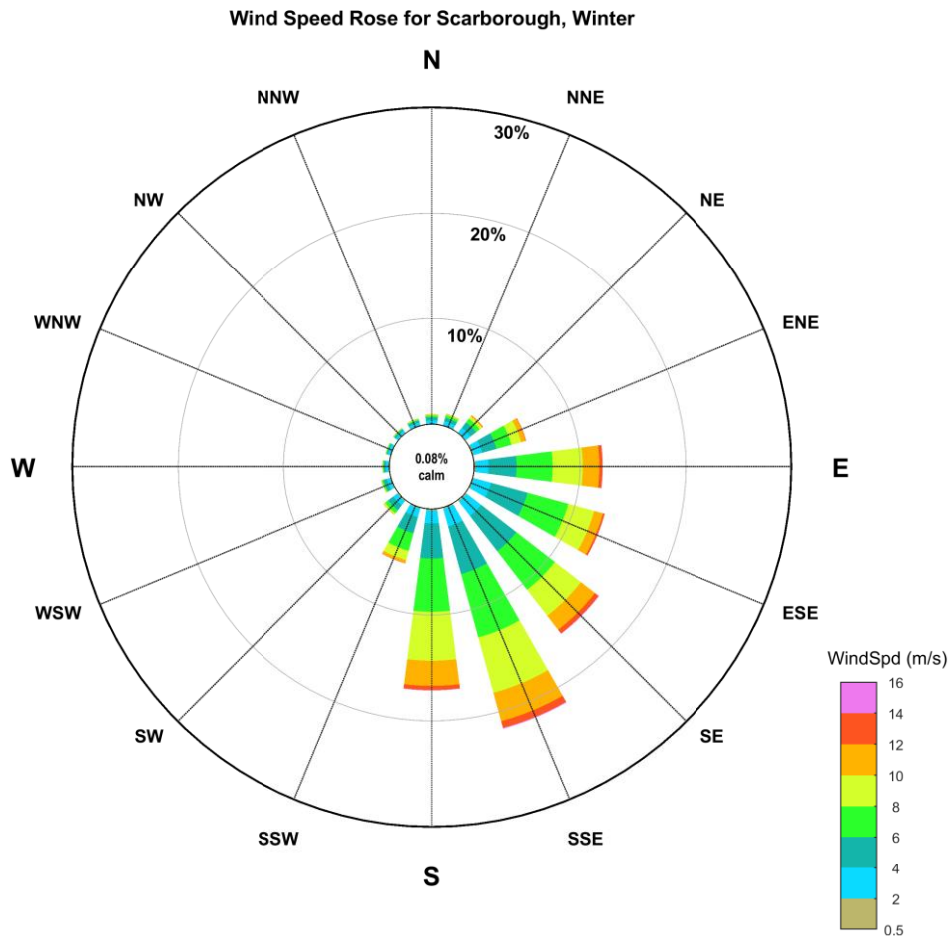
Project: North West Shelf  
 Location: Scarborough [113.2000°E, 19.8800°S]  
 Data Period: Summer (01-Jan-1979 to 01-Jan-2011)  
 Data Source: CSFR  
 Record Elevation: 10 m AMSL  
 Local Water Depth (m): 950  
 Data Summary: Summer  
 Number of Records: 129521  
 Missing Data (%): 7.46  
 Calm (% < 0.50m/s): 0.09  
 Measurement Format: 10-minute avg.


**Key Statistics for Data Shown:**

Max Wind Speed: 16.75 m/s  
 Mean Wind Speed: 7.23 m/s  
 StdDev. Wind Speed: 2.64 m/s



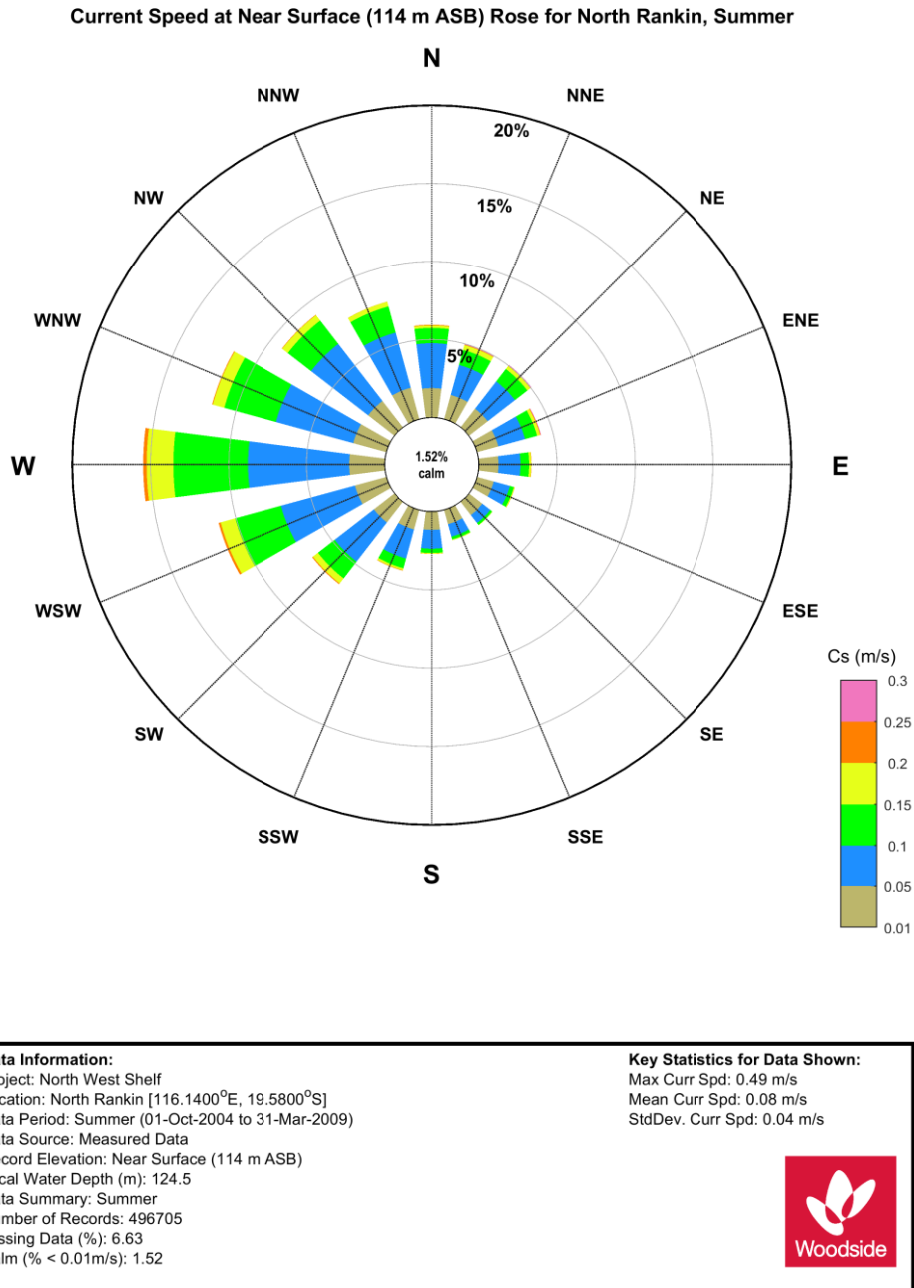
**Figure 4. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8] SW winds are also experienced at this site due to the monsoon trough.**



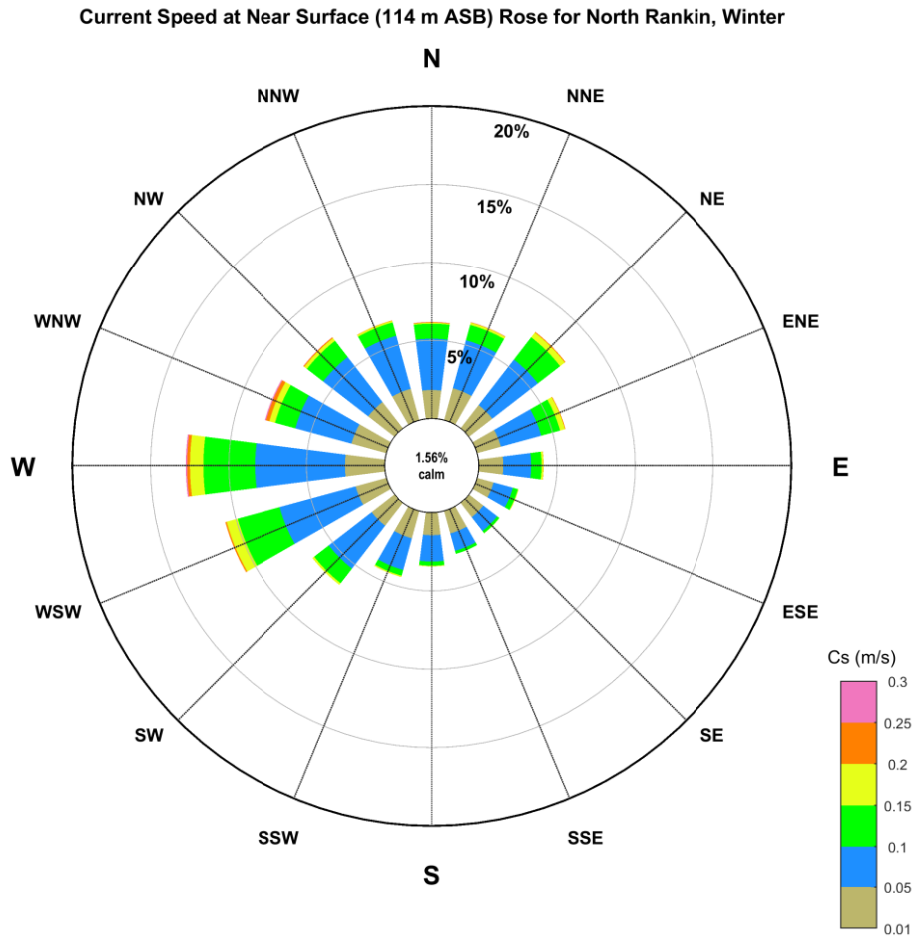
<p><b>Data Information:</b>                  Project: North West Shelf                  Location: Scarborough [113.2000°E, 19.8800°S]                  Data Period: Winter (01-Apr-1979 to 30-Sep-2010)                  Data Source: CSFR                  Record Elevation: 10 m AMSL                  Local Water Depth (m): 950                  Data Summary: Winter                  Number of Records: 138863                  Missing Data (%): 1.20                  Calm (% &lt; 0.50m/s): 0.08                  Measurement Format: 10-minute avg.</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Wind Speed: 19.15 m/s                  Mean Wind Speed: 6.90 m/s                  StdDev. Wind Speed: 2.57 m/s</p> <div style="text-align: right;">  </div>
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**Figure 5. Winter distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the S to E driven by the South East Trade Winds over Australia (RPS, 2016).**

## North-west Shelf



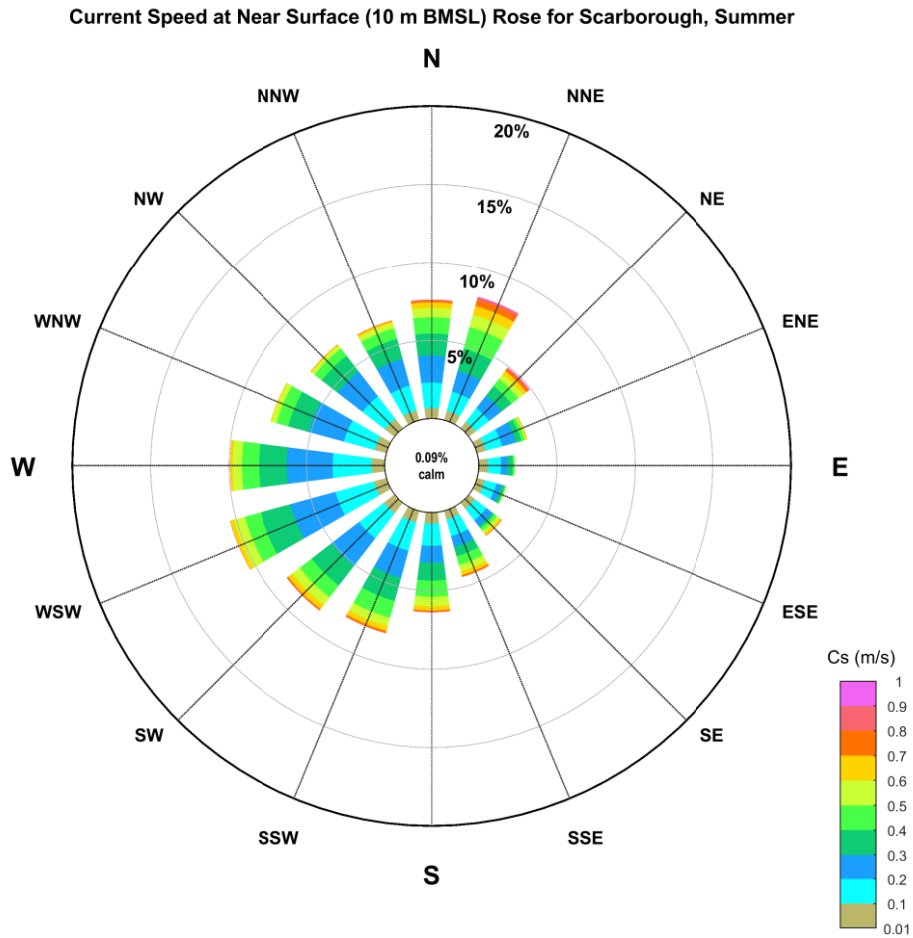
**Figure 6. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).**




<p><b>Data Information:</b>                  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 (% &lt; 0.01m/s): 1.56</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Curr Spd: 0.32 m/s                  Mean Curr Spd: 0.07 m/s                  StdDev. Curr Spd: 0.04 m/s</p> <div style="text-align: right; margin-top: 10px;"> </div>
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**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).**

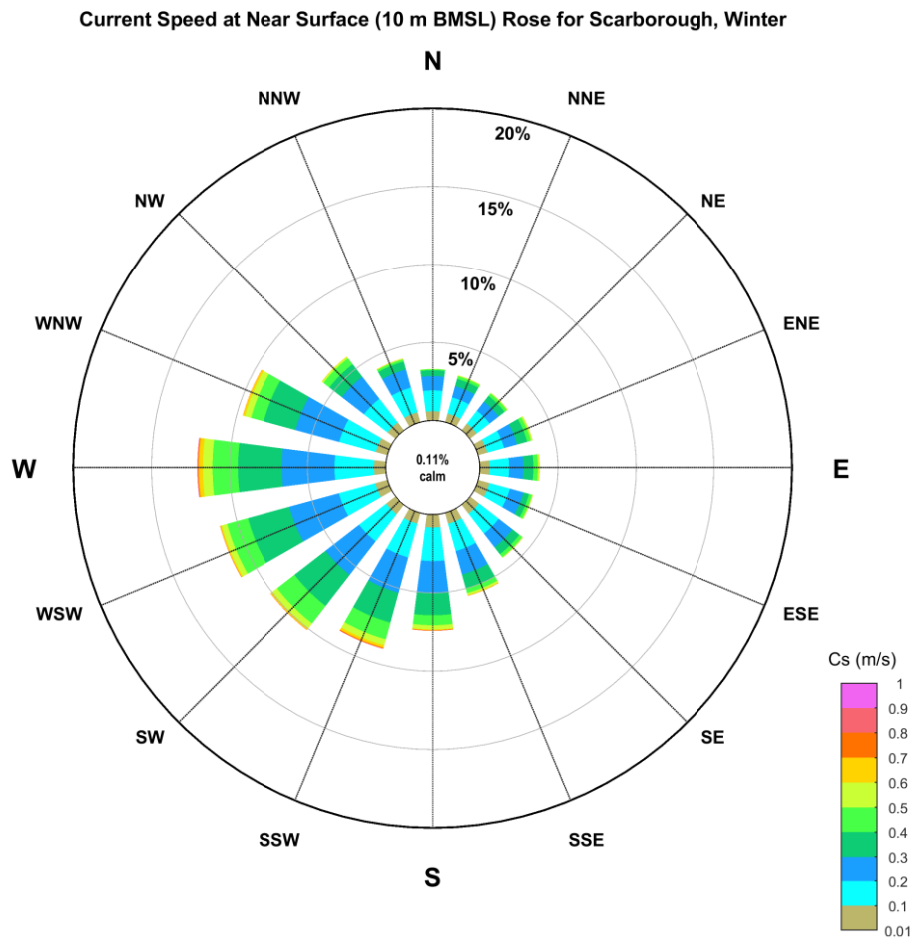
# Scarborough




<p><b>Data Information:</b>                  Project: North West Shelf                  Location: Scarborough [113.2000°E, 19.8800°S]                  Data Period: Summer (15-Jan-2010 to 29-Feb-2012)                  Data Source: Measured Data                  Record Elevation: Near Surface (10 m BMSL)                  Local Water Depth (m): 950                  Data Summary: Summer                  Number of Records: 43600                  Missing Data (%): 7.11                  Calm (% &lt; 0.01m/s): 0.09</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Curr Spd: 1.03 m/s                  Mean Curr Spd: 0.29 m/s                  StdDev. Curr Spd: 0.17 m/s</p> <div style="text-align: right;">  </div>
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**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).**

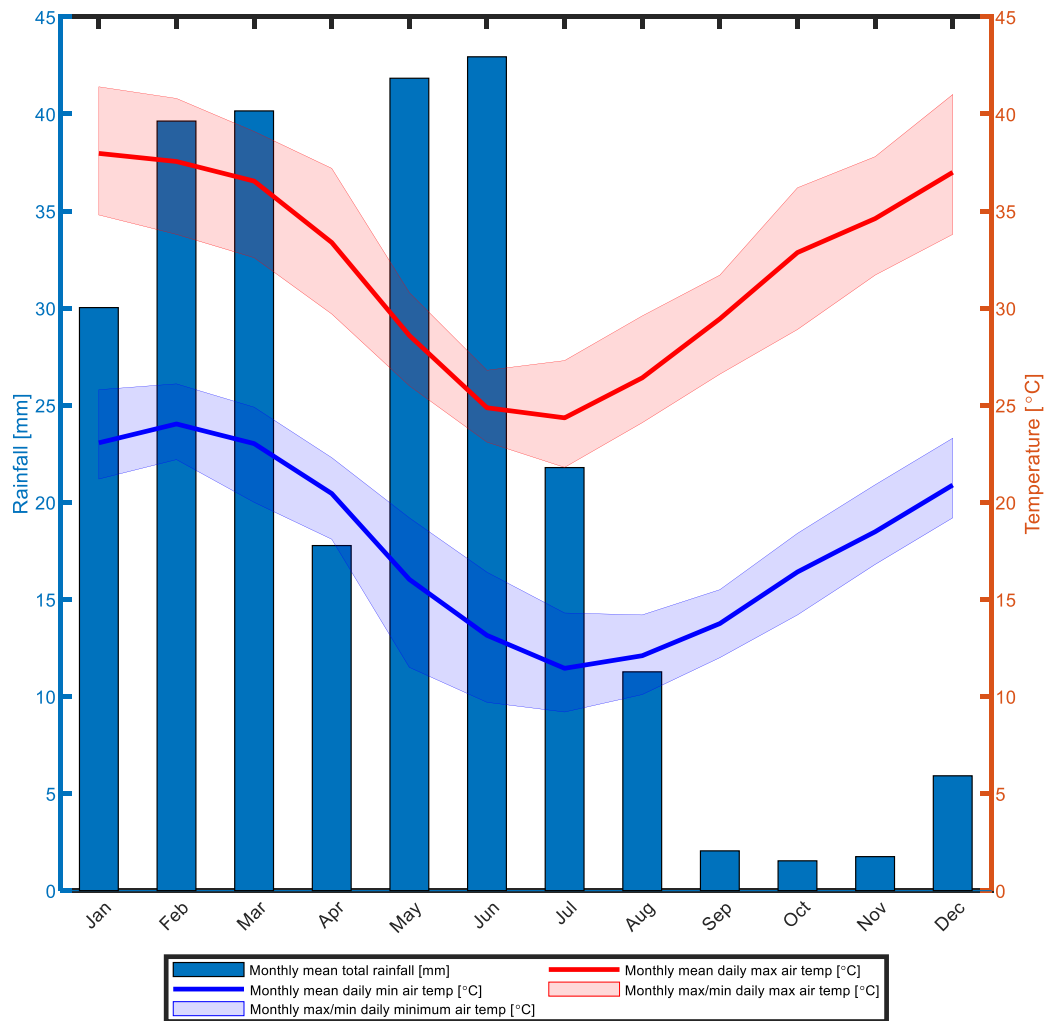




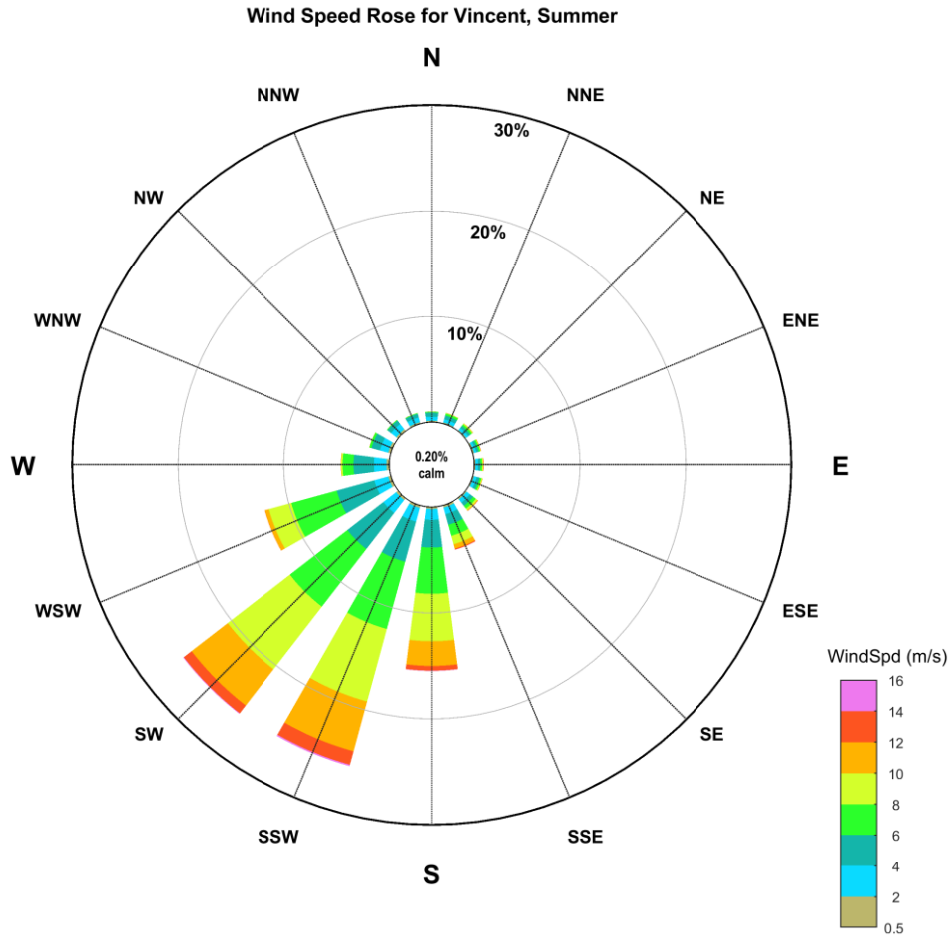
<p><b>Data Information:</b>                  Project: North West Shelf                  Location: Scarborough [113.2000°E, 19.8800°S]                  Data Period: Winter (01-Apr-2010 to 30-Sep-2011)                  Data Source: Measured Data                  Record Elevation: Near Surface (10 m BMSL)                  Local Water Depth (m): 950                  Data Summary: Winter                  Number of Records: 49345                  Missing Data (%): 3.01                  Calm (% &lt; 0.01m/s): 0.11</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Curr Spd: 1.03 m/s                  Mean Curr Spd: 0.25 m/s                  StdDev. Curr Spd: 0.13 m/s</p> <div style="text-align: right;">  </div>
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**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



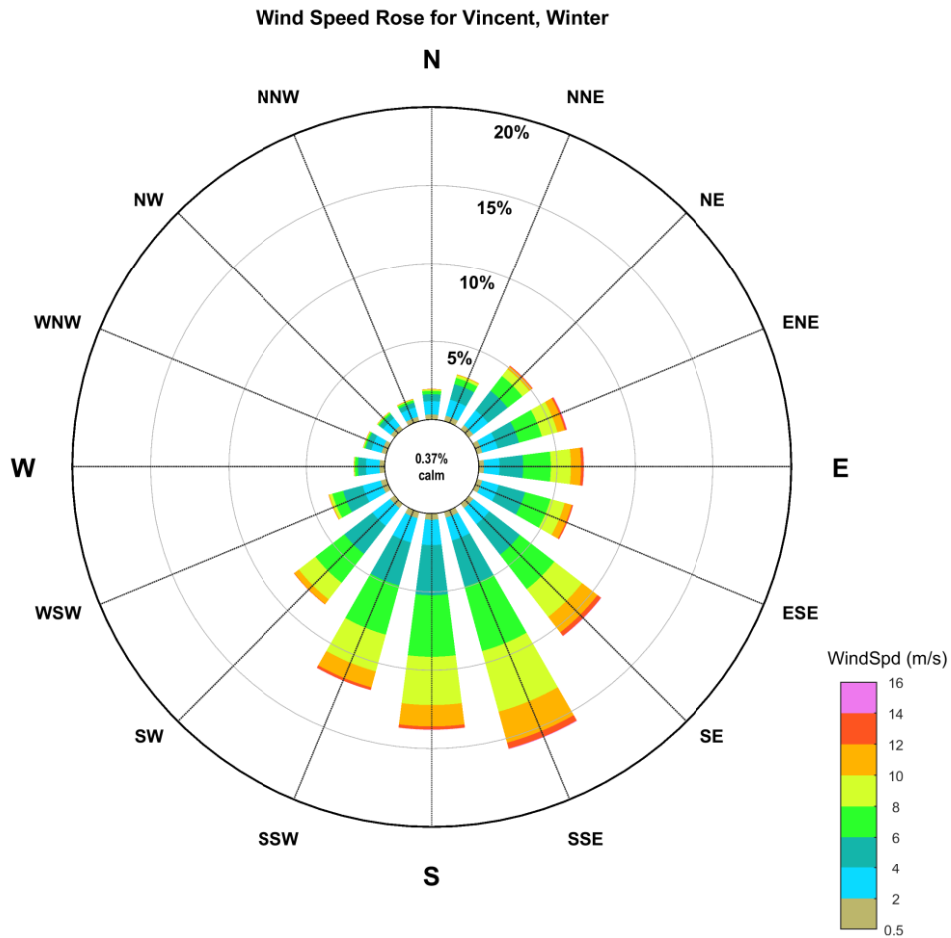
**Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines 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.**




<p><b>Data Information:</b>                  Project: North West Cape                  Location: Vincent [114.0600°E, 21.4400°S]                  Data Period: Summer (01-Jan-1979 to 01-Jan-2019)                  Data Source: Modelled Hindcast                  Record Elevation: 10 m AMSL                  Local Water Depth (m): 350                  Data Summary: Summer                  Number of Records: 159379                  Missing Data (%): 8.91                  Calm (% &lt; 0.50m/s): 0.20                  Measurement Format: 10-minute avg.</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Wind Speed: 18.86 m/s                  Mean Wind Speed: 7.10 m/s                  StdDev. Wind Speed: 2.75 m/s</p>
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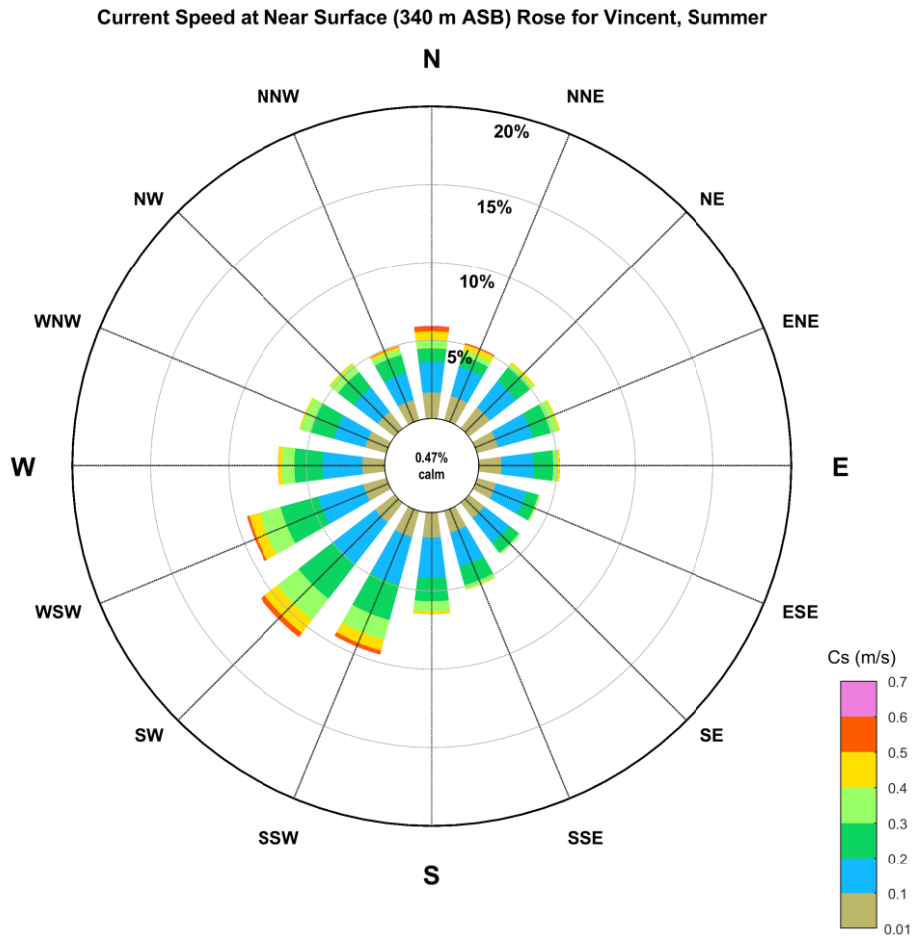


**Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).**



<p><b>Data Information:</b>                  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 (% &lt; 0.50m/s): 0.37                  Measurement Format: 10-minute avg.</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Wind Speed: 19.39 m/s                  Mean Wind Speed: 6.23 m/s                  StdDev. Wind Speed: 2.78 m/s</p> 
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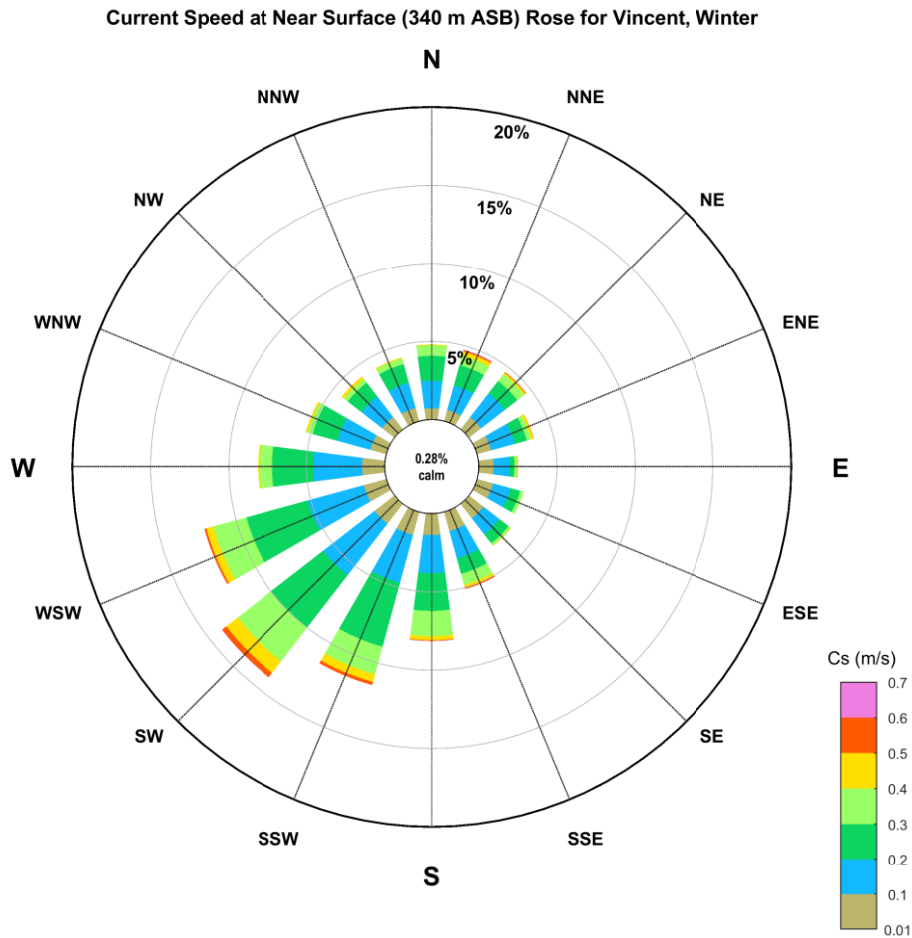
**Figure 3. Winter distributions of wind speeds (10-minute at 10 m ASL) 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. In winter, winds are predominantly from the S to SE, associated with the South East Trades. Easterly 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).**




<p><b>Data Information:</b>                  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 (% &lt; 0.01m/s): 0.47</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Curr Spd: 0.75 m/s                  Mean Curr Spd: 0.19 m/s                  StdDev. Curr Spd: 0.11 m/s</p>
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**Figure 4. Summer (May – Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).**



<p><b>Data Information:</b>                  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 (% &lt; 0.01m/s): 0.28</p>	<p><b>Key Statistics for Data Shown:</b>                  Max Curr Spd: 0.64 m/s                  Mean Curr Spd: 0.20 m/s                  StdDev. Curr Spd: 0.11 m/s</p> <div style="text-align: right; margin-top: 10px;">  </div>
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**Figure 5. Winter (Nov – Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).**

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# APPENDIX I SCARBOROUGH DEVELOPMENT DREDGED SEDIMENT DISPERSION MODELLING REPORT

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# SCARBOROUGH DEVELOPMENT DREDGED SEDIMENT DISPERSION MODELLING

Report



MAW0753J.002  
Scarborough Development  
Dredged Sediment  
Dispersion Modelling  
Rev 3  
22 March 2022

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# 1 INTRODUCTION

## 1.1 Background

RPS was commissioned by Woodside Energy Ltd (Woodside) to undertake sediment dispersion modelling of dredging, disposal and backfill operations associated with the development of Scarborough, in support of the State and Commonwealth referrals and an Offshore Project Proposal to NOPSEMA. The Scarborough gas field is located within offshore permit WA-1-R.

Dredging, disposal and backfill operations along the Scarborough pipeline route, from the mainland of the Burrup Peninsula outwards to a chainage of KP50, are proposed as part of the project (Figure 1.1).

RPS has conducted sediment dispersion modelling to quantify the potential magnitude, intensity and spatial distribution of suspended sediment concentrations (SSC) and sedimentation that would be expected for the dredging, disposal and backfill operations proposed for the development of Scarborough. The predicted outcomes are to be used to inform the assessment of the potential for influence or impact upon water quality and benthic habitats in the region.

This technical report contains a summary of the sediment fate model inputs, methodologies and assumptions, and the model outcomes following analysis of specified threshold criteria.

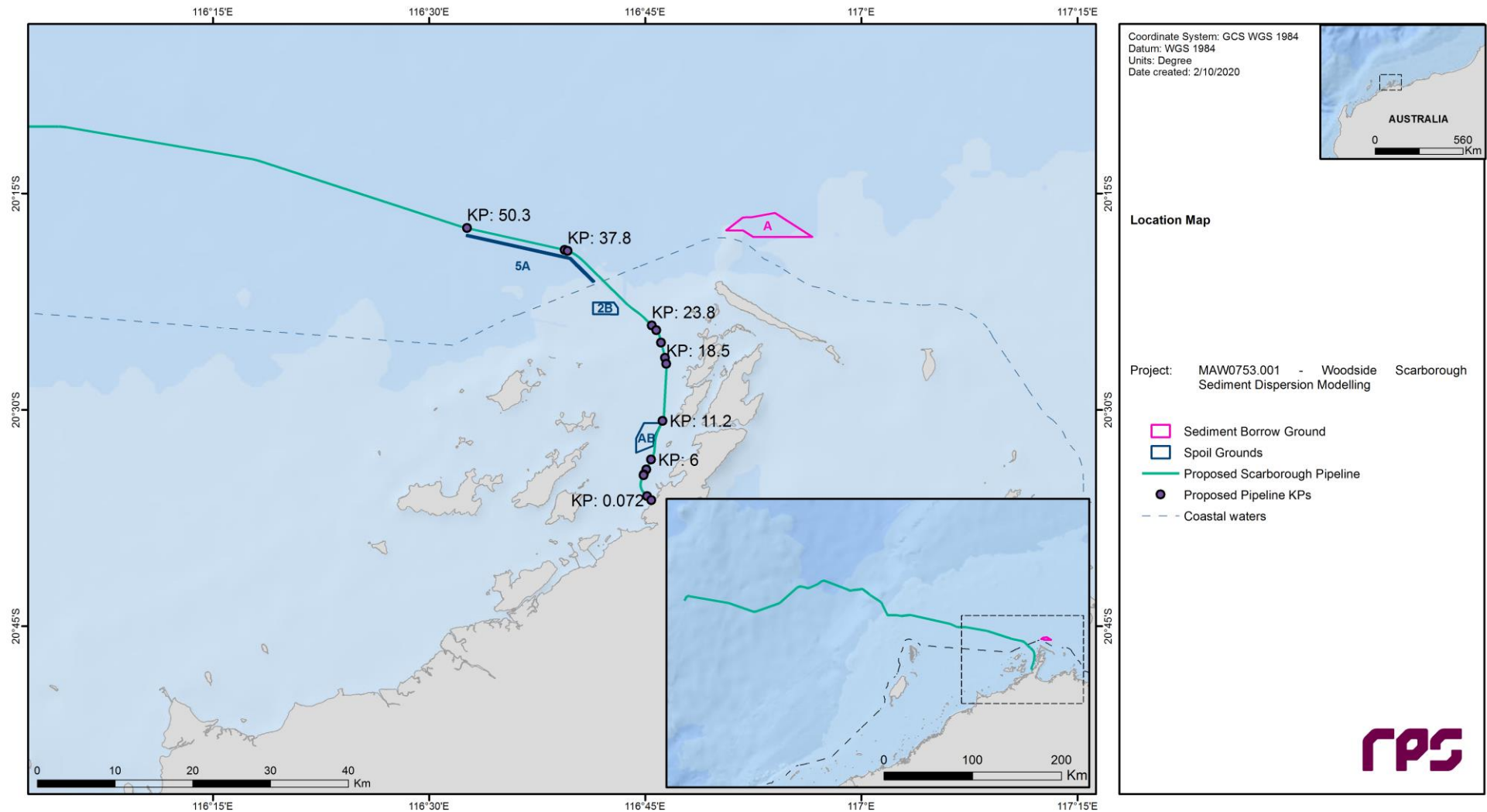


Figure 1.1 Route of the inner sections (KP0 to KP50) of the proposed Scarborough pipeline on the North West Shelf of Australia, and locations of the existing spoil grounds (AB, 2B and 5A) and sediment borrow ground A that will be utilised during disposal and backfill activities.

## 1.2 Modelling Scope

RPS was commissioned to conduct sediment dispersion modelling for the following activities:

- Dredging of sediment along the pipeline route and disposal of dredged sediment at three nominated spoil grounds.
- Dredging of the borrow ground and backfill and stabilisation of the pipeline.

The scope of work required to complete the sediment dispersion modelling included:

1. Hydrodynamic Modelling.
  - a. An initial assessment of the existing D-FLOW hydrodynamic model framework in the Mermaid Sound region determined that refinements were necessary to suit the requirements of this scope of work. Reconfiguration of the model was conducted, followed by re-validation of the model predictions against available measurements of water levels and currents for the same validation period as utilised previously.
  - b. Two years (2016-2017) of hydrodynamic simulation data was produced for use as input to the sediment dispersion model.
2. Wave Modelling.
  - a. An initial assessment of the existing D-WAVE wave model framework in the Mermaid Sound region determined that refinements were necessary to suit the requirements of this scope of work. Reconfiguration of the model was conducted, followed by re-validation of the model predictions against available predictions from an operational RPS model for the same validation period as utilised previously.
  - b. Two years (2016-2017) of wave simulation data was produced for use as input to the sediment dispersion model.
3. Sediment Dispersion Modelling.
  - a. Inputs for the dredging program were prepared for the DREDGEMAP model, accounting for all potential concurrent sources of sediment characterised by location, intensity, particle size distribution, vertical distribution in the water column, and levels of cohesivity.
  - b. Two dredging, disposal and backfill scenarios were simulated: (i) dredging commencing in winter; and (ii) dredging commencing in summer.
  - c. Simulation outputs from each separate dredging, disposal and backfill activity were post-processed, combined and analysed to determine outcomes including zones of impact and influence for each scenario based on specified threshold criteria.
  - d. Key model outcomes were provided as spatial datasets in GIS shapefile format.
4. Reporting. A technical report detailing the sediment fate model inputs, methodologies, assumptions and model outcomes following analysis of specified threshold criteria was provided.

## 1.3 Definitions of Relevant Terms and Abbreviations

### **BHD:**

Backhoe Dredge. A pontoon equipped with a hydraulic excavator. The pontoon is stabilised and secured by three spuds. The excavator uses a large arm fitted with a bucket to excavate material from the seabed and discharge it into (typically) a split hopper barge moored alongside. BHDs are mainly used for dredging or breaking up the sedimentary rock below a layer of unconsolidated sediments, or for dredging in areas inaccessible to larger self-propelled vessels.

### **Dewatering:**

Draining of excess water from a split hopper barge using its drainage system.

### **Overflow:**

Excess water and suspended solids that leave a TSHD hopper and are discharged to the water column via a weir and discharge pipe located at the base of the vessel.

### **Resuspension:**

Removal of deposited material from the seabed to the water column as a result of natural or artificial agitation.

### **Sedimentation rate:**

Rate of sediment accumulation on the seabed following deposition of SSC from the water column.

### **Side-dump vessel:**

Self-propelled vessel that is capable of transporting and installing a variety of different sizes of rock. Large cranes or fall pipes are used to dump rocks from the vessels to the seabed.

### **Split hopper barge:**

Vessel with a large open hold used to load and transport dredged material. The unloading is performed by splitting the two halves of the hull to release the material towards the seabed.

### **SSC:**

Suspended Solids Concentration (or Suspended Sediment Concentration). The concentration of sediment material in the water column following natural or artificial resuspension from the seabed.

### **TSHD:**

Trailer Suction Hopper Dredge. A self-propelled vessel with one or two suction tubes/arms, equipped with drag-heads that are lowered to the seabed and trailed over the bottom. The vessel has a powerful pump system that sucks up a mixture of sediment and water and discharges it in the hopper (hold) of the vessel. TSHDs are mainly used for dredging loose and soft soils such as sand, gravel, silt or clay.

## 2 HYDRODYNAMIC AND WAVE MODELLING

### 2.1 Overview

Modelling of the potential sediment dispersion from the dredging, disposal and backfill activities associated with the development of Scarborough required temporal and spatial representation of the hydrodynamic and wave conditions within the project area. A hydrodynamic and wave model framework for the Mermaid Sound area was constructed, calibrated and validated for a past marine modelling study of dredge spoil stability and navigation for Woodside (RPS, 2016). This model framework has been refined for the Scarborough scope of work and is described in the following sections.

The hydrodynamic and wave modelling for the project was conducted using the Delft3D suite of software. The Delft3D suite is a fully integrated computer software package composed of several modules (e.g. flow, waves, sediment, water quality, and ecology) grouped around a common interface. This software suite has been developed to carry out studies with a multi-disciplinary approach and multi-dimensional calculations (e.g. 2-D and 3-D) for a range of systems, such as oceanic, coastal, estuarine and river environments. It can simulate the interaction of flows, waves, sediment transport, morphological developments, water quality and aquatic ecology. Specific modules of the Delft3D suite are referenced in this report, following the convention of the software developers, with the suffix D- (e.g. D-FLOW for the Delft3D Hydrodynamics module and D-WAVE for the Delft3D Spectral Wave module).

The Delft3D suite has been developed by Deltares, an independent institute for applied research on water with over 30 years of experience in modelling aquatic systems (<http://www.deltares.nl/en>). The Delft3D suite of models adheres to the International Association for Hydro-Environment Engineering and Research guidelines for documenting the validity of computational modelling software, closely replicating an array of analytical, laboratory, schematic and real-world data.

The configuration of the current and wave models is in line with recommendations of best practice for sediment dispersion modelling in Western Australia as outlined by WAMSI Dredging Science Node guidance (Sun *et al.*, 2016). Inclusion of mesoscale ocean currents is recommended, as these currents have a significant influence on the net drift of suspended material over the time scales of dredging operations (days to weeks) and are therefore important to predictions of sediment transport. The use of three-dimensional current modelling with a series of interconnected grids of progressively finer resolution is also recommended, as are coupling of the current and wave models and validation of current predictions against measured data.

### 2.2 Hydrodynamic Model (D-FLOW)

#### 2.2.1 Model Description

To simulate the hydrodynamics within Mermaid Sound and the surrounding area, a three-dimensional model with accurate representations of the bathymetry, bottom roughness and spatially-varying wind stress was utilised for the region. The model framework was developed through the combination of a large-scale regional model with smaller refined regions, or sub-domains.

The D-FLOW model is ideally suited to represent the hydrodynamics of complex coastal waters, including regions where the tidal range creates large intertidal zones and where buoyancy processes are important. RPS has applied the model for numerous studies in the region.

D-FLOW is a multi-dimensional (2-D or 3-D) hydrodynamic (and transport) simulation program which calculates non-steady flow and transport phenomena that result from tidal, meteorological and baroclinic forcing on a rectilinear or a curvilinear, boundary-fitted grid. In three-dimensional simulations, the vertical grid can be defined following the sigma-coordinate approach, where the local water depth is divided into a series of layers with thickness at a set proportion of the depth.

D-FLOW allows for the establishment of a series of interconnected (two-way, dynamically-nested) curvilinear grids of varying resolution; a technique referred to as “domain decomposition”. This allows for the generation of a series of grids with progressively increasing spatial resolution, down to an appropriate scale for accurate resolution of the hydrodynamics associated with features such as dredged channels. The main advantage of domain decomposition over traditional one-way, or static, nesting systems is that the model domains interact seamlessly, allowing transport and feedback between the regions of different scales. The ability to dynamically



couple multiple model domains offers a flexible framework for hydrodynamic model development. This modelling method was applied in this study.

Inputs to the model, as discussed in the following sections, included:

- Bathymetry of the study area, including shipping channels, islands, and adjacent features. The wetting and drying of the intertidal zones was simulated in applicable areas.
- Boundary elevation forcing data.
- Spatially-varying surface wind and pressure data.

### 2.2.2 Bathymetry and Domain Definition

The hydrodynamic model was established over the domain shown in Figure 2.1. Accurate bathymetry is a significant factor in development of a model framework required to resolve highly variable wave and current conditions. The bathymetry was developed using data provided by Woodside and supplemented with data from Geoscience Australia and the C-MAP electronic chart database where relevant and required.

The composite bathymetric data was interpolated onto the D-FLOW Cartesian grid. The resultant bathymetry is shown in Figure 2.2. The extent and shape of the model coastline will change as water levels rise and fall with tidal movements due to the inclusion of wetting and drying within the model system.

The vertical grid of the model comprised five layers of varying thickness, depending on location, throughout the domain. Five layers was found to be enough to resolve the circulation and provide suitable bed level currents, without overly compromising model performance. As the model was set up as a proportional sigma-grid in the vertical dimension, these layers therefore represented a terrain-following arrangement with a layer thickness of 20% of the total local water depth.

To offset the computational effort required for a large, multi-layered model domain, and to achieve adequate horizontal and temporal resolution, a multiple-grid (domain-decomposition) strategy was applied using three sub-domains of varying horizontal grid cell size (Figure 2.1 and Figure 2.2). Horizontal resolutions within each sub-domain were 250 m for the Mermaid Sound region from Enderby Island to Legendre Island (sub-grid 2), 500 m for the intermediate region (sub-grid 1) and 2 km for the outer domain (sub-grid 0).

Each sub-domain is an individual hydrodynamic model simulated in parallel with the others, with dynamic coupling at the shared boundaries between sub-domains. The outermost sub-domain captured large-scale oceanographic phenomena which progressively fed into the finer-resolution domains representing the area of interest. The resolution of the innermost sub-domain was specified after assessment of the requirement to adequately resolve the variation in current fields, and in turn the sediment dynamics.

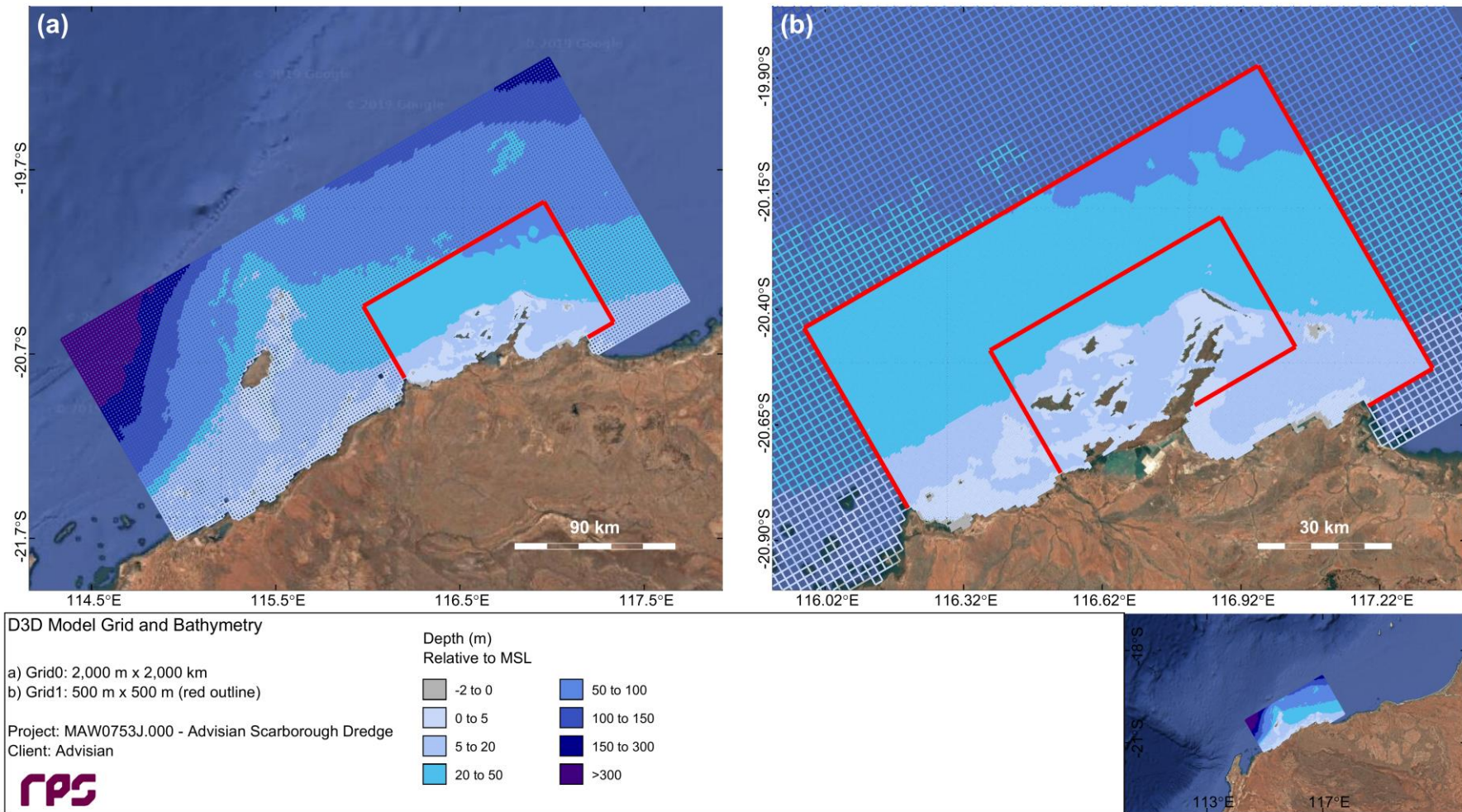


Figure 2.1 Model grid setup showing the domain-decomposition scheme applied, highlighting the two outermost grids.



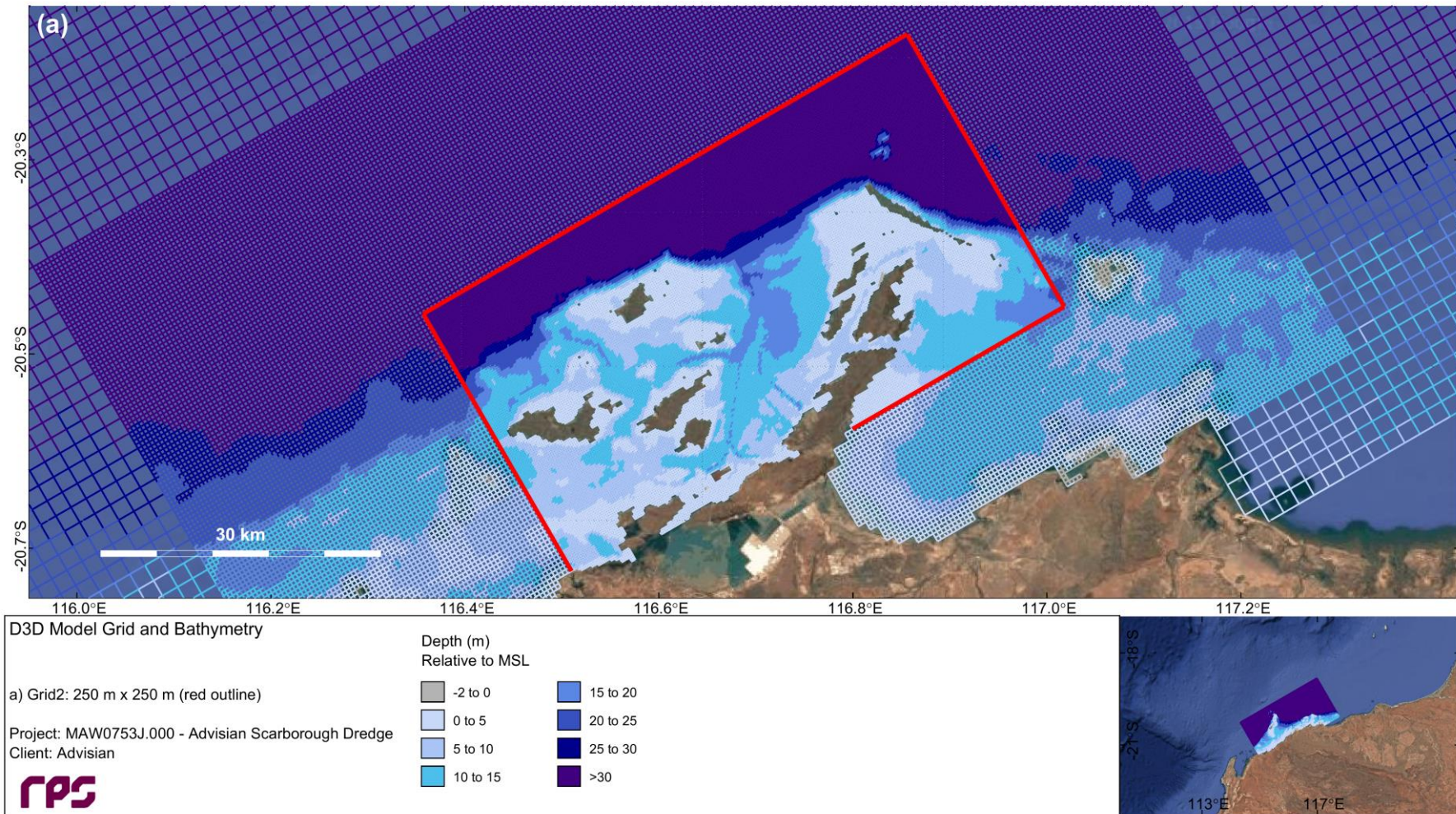


Figure 2.2 Model grid setup showing the domain-decomposition scheme applied, highlighting the innermost grid.

## 2.2.3 Boundary and Initial Conditions

### 2.2.3.1 Overview

As the hydrodynamics in the study area are controlled primarily by tidal flows and wind forcing, these processes were explicitly included in the developed model.

The model was forced on the open boundaries of the outer sub-domain with time series of water elevation obtained for the chosen simulation period. Spatially-varying wind speed and wind direction data was used to force the model across the entire domain.

### 2.2.3.2 Water Elevation

Water elevations at hourly intervals were obtained from the TPXO8.0 database, which is the most recent iteration of a global model of ocean tides derived from measurements of sea-surface topography by the TOPEX/Poseidon satellite-borne radar altimeters. Tides are provided as complex amplitudes of earth-relative sea-surface elevation for eight primary ( $M_2$ ,  $S_2$ ,  $N_2$ ,  $K_2$ ,  $K_1$ ,  $O_1$ ,  $P_1$ ,  $Q_1$ ), two long-period ( $M_f$ ,  $M_m$ ) and three non-linear ( $M_4$ ,  $MS_4$ ,  $MN_4$ ) harmonic constituents at a spatial resolution of  $0.25^\circ$ .

The tidal sea level data was augmented with non-tidal sea level elevation data from the global Hybrid Coordinate Ocean Model (HYCOM; Bleck, 2002; Chassignet *et al.*, 2003; Halliwell, 2004), created by the USA's National Ocean Partnership Program (NOPP) as part of the Global Ocean Data Assimilation Experiment (GODAE). The HYCOM model is a three-dimensional model that assimilates observations of sea surface temperature, sea surface salinity and surface height, obtained by satellite instrumentation, along with atmospheric forcing conditions from atmospheric models to predict drift currents generated by such forces as wind shear, density, sea height variations and the rotation of the Earth.

The HYCOM model is configured to combine the three vertical coordinate types currently in use in ocean models: depth (z-levels), density (isopycnal layers), and terrain-following ( $\sigma$ -levels). HYCOM uses isopycnal layers in the open, stratified ocean, but uses the layered continuity equation to make a dynamically smooth transition to a terrain-following coordinate in shallow coastal regions, and to z-level coordinates in the mixed layer and/or unstratified seas. Thus, this hybrid coordinate system allows for the extension of the geographic range of applicability to shallow coastal seas and unstratified parts of the world ocean. It maintains the significant advantages of an isopycnal model in stratified regions while allowing more vertical resolution near the surface and in shallow coastal areas, hence providing a better representation of the upper ocean physics than non-hybrid models. The model has global coverage with a horizontal resolution of  $1/12^{\text{th}}$  of a degree ( $\sim 7$  km at mid-latitudes) and a temporal resolution of 24 hours.

### 2.2.3.3 Wind Forcing

Spatially-variable wind data was sourced from the Global Data Assimilation System (GDAS), which is used by the National Centers for Environmental Prediction (NCEP) Global Forecast System (GFS) model to place observations into a gridded model space for the purpose of starting, or initializing, weather forecasts with observed data. The GFS Forecasts model variant used has a horizontal resolution of  $1/12^{\text{th}}$  of a degree and a temporal resolution of 6 hours (NCEP, 2016).

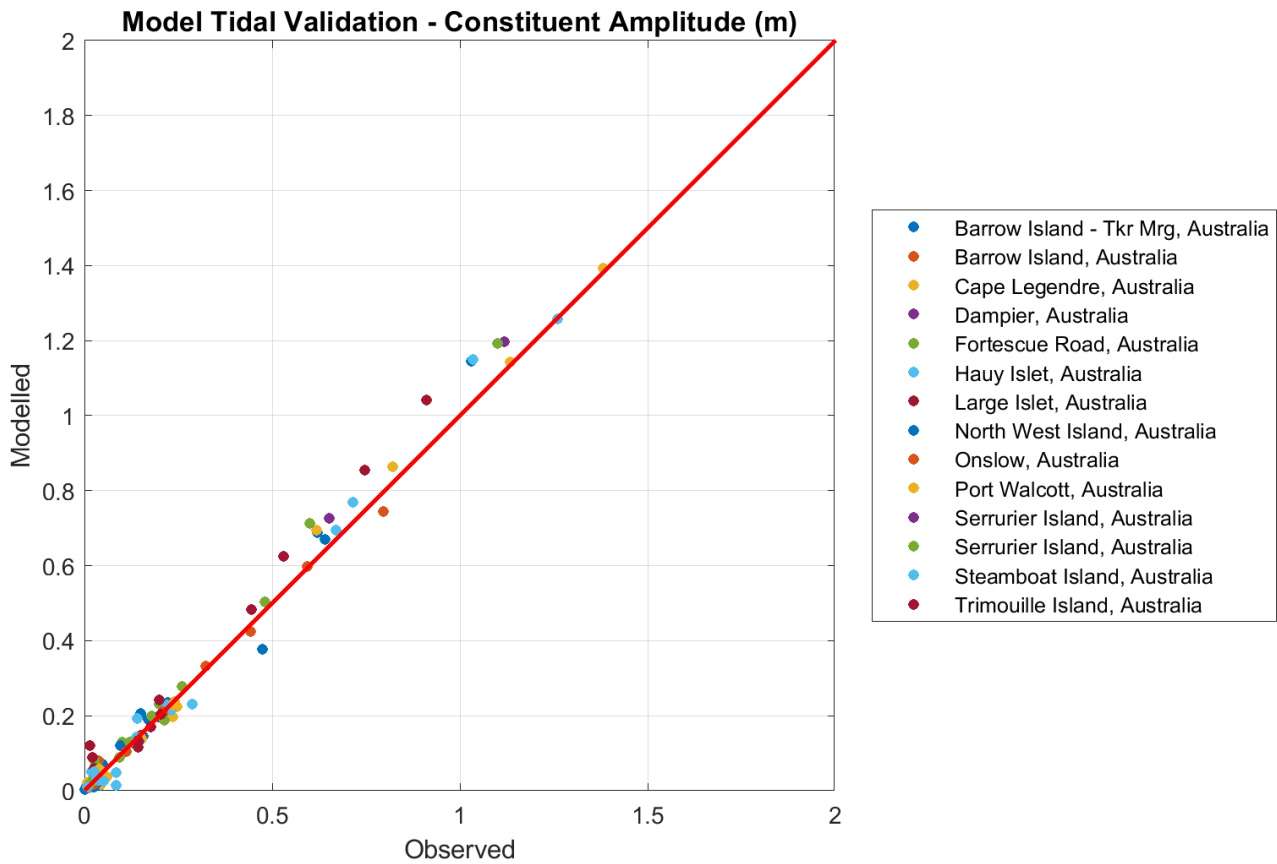
## 2.2.4 Model Validation

### 2.2.4.1 Comparison of Modelled and Measured Water Elevation

Validation of the water level changes predicted by the D-FLOW hydrodynamic model configuration was provided through comparisons to independent predictions from the XTide tidal constituent database (Flater, 1998). Comparison of model tidal amplitudes with the XTide database showed strong agreement (Figure 2.3), with slight overprediction of tidal amplitudes at some stations. Time series comparisons for two tide stations situated at locations that are relevant to this study also showed good agreement (Figure 2.4).

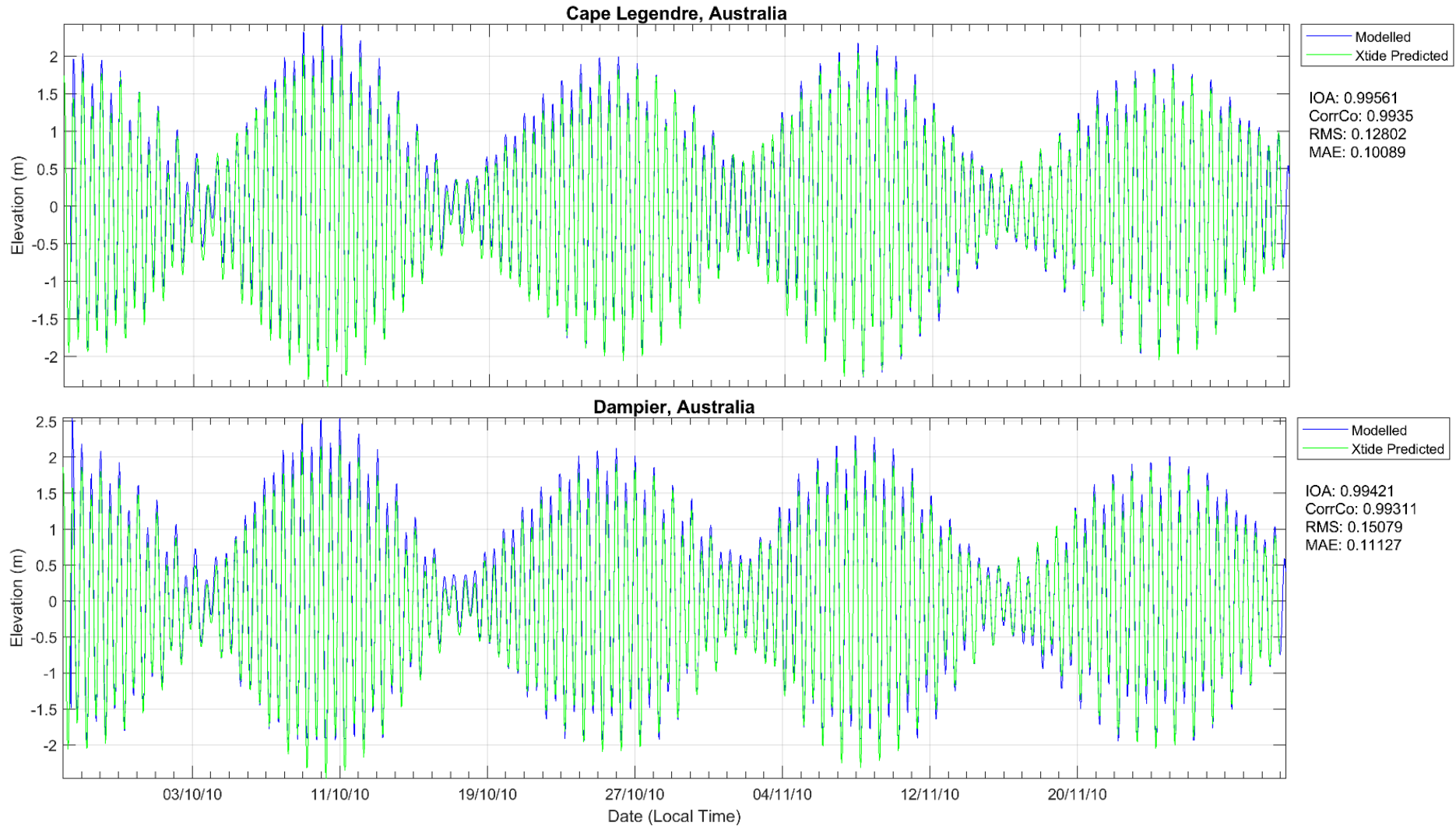
In general, a consistent match is observed between water elevations calculated by the D-FLOW model and those predicted by XTide (Figure 2.4). Both the amplitude and phase of the semidiurnal tidal signal are clearly reproduced at each station, as is the timing of the spring-neap cycle. The D-FLOW model slightly overpredicts

high tides and underpredicts low tides, which indicates there was a small difference between the datums used to compare these different data sets rather than actual amplitude differences.



**Figure 2.3 Comparison of tidal amplitudes from the D-FLOW hydrodynamic model (y-axis) with those from the XTide database (x-axis) at 14 stations located within the model domain.**





**Figure 2.4 Comparisons of water elevations predicted by the D-FLOW hydrodynamic model (blue line) with those predicted by the XTide database (green line) over the validation period of October-November 2010 at two selected station locations.**

### 2.2.4.2 Comparison of Modelled and Measured Currents

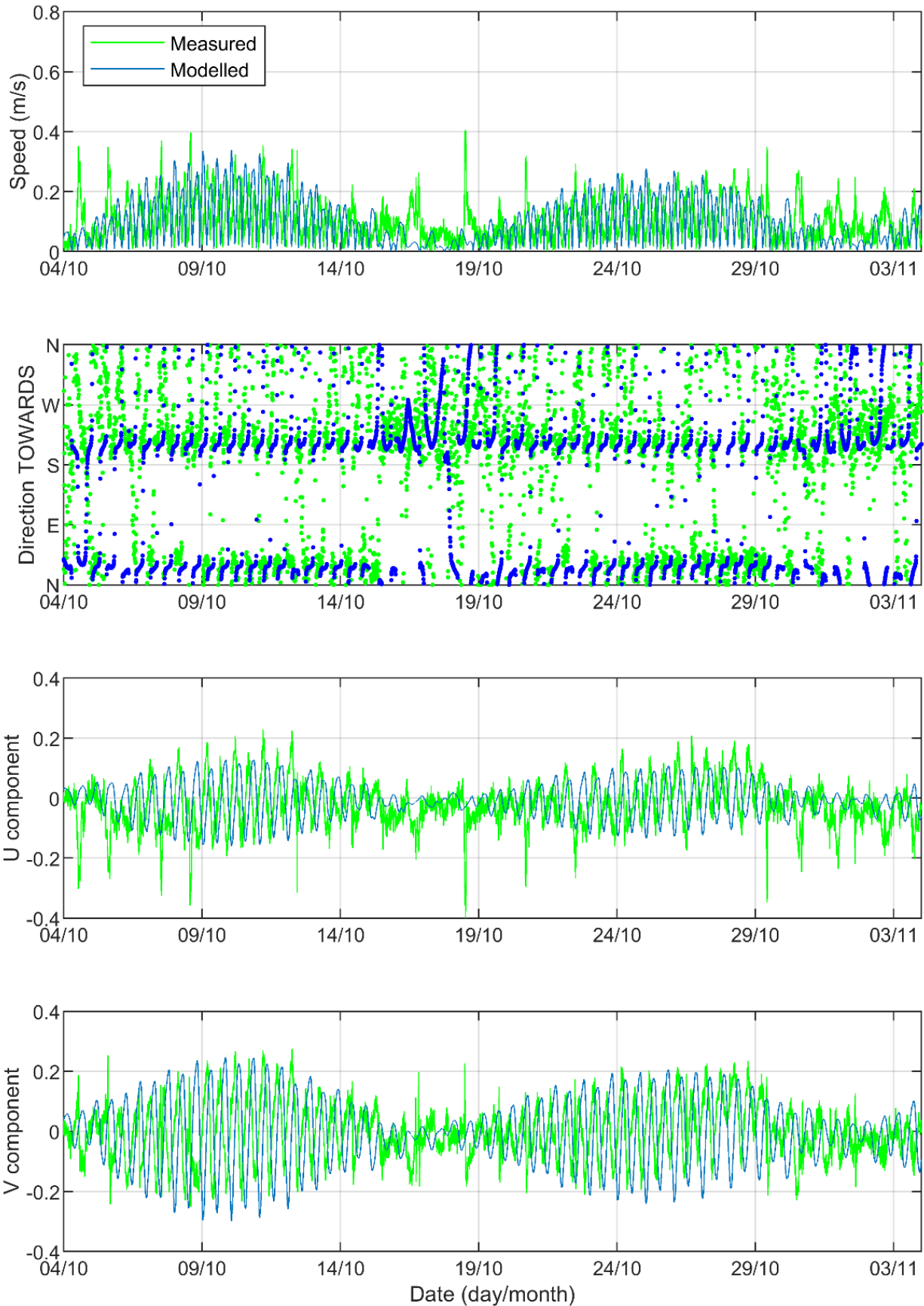
Validation of the model-predicted currents was conducted for a spring/neap tide period during October and November 2010 by comparing the model results to measured data from the Woodside LNG Channel AWAC that was located within Mermaid Sound (116.738° E, 20.561° S) in water depth of approximately 12 m. Comparisons of current speed and direction at a depth interval representative of the mid-water column are provided in Figure 2.5.

Overall, the comparison indicates that the model provides a good prediction of tidal currents at the comparison site. There was a minor mismatch in the phase of the tidal oscillations, with a slight lag apparent in the modelled data. However, this lag was not evident in the XTide water level comparisons (Figure 2.4).

The amplitudes of the modelled and measured current fluctuations were generally well-matched, but there were some spikes in the measured data that were not reproduced. These spikes in the measured data, assuming they were not instrument errors, may have been caused by local-scale events related to wind-driven currents. These events are difficult to reproduce in the model because the horizontal grid scale of the model in this region is 250 m. The GFS wind driving the model can be less accurate close to the coast when sea breeze effects are dominant. The inability of the model to reproduce some spikes observed in the measured data might be explained by inaccuracies in the NCEP wind data near to the Woodside LNG Channel AWAC location.

The vertical layer structure of the model is not considered to be significant in shallow areas – including the majority of Mermaid Sound – during periods of typical ambient wind conditions, but in deeper areas the layering allows differences in current characteristics between the wind-affected surface layers and the near-seabed layers to drive sediment dispersion.





**Figure 2.5 Comparisons of modelled (blue line) and measured (green line) currents for a mid-water column depth interval at the Woodside LNG Channel AWAC location during the 2010 validation period.**

## 2.3 Wave Model (D-WAVE)

### 2.3.1 Model Description

Reliable forecasting for the fate of fine sediments in the study location, which is a wave-exposed coastal region, required the input of wave spectra information to calculate the shear-stress and orbital velocities imposed by waves which will affect the settlement and re-suspension of fine material that is initially suspended by dredging and related operations. D-WAVE is a variant of the well-known SWAN wave model that has been customised for compatibility with the Delft3D software suite.

The D-WAVE model is a spectral phase-averaging wave model originally developed by the Delft University of Technology. D-WAVE, a third-generation model based on the energy balance equation, is a numerical model for simulating realistic estimates of wave parameters in coastal areas for given wind, bottom and current conditions.

D-WAVE includes algorithms for the following wave propagation processes: propagation through geographic space; refraction and shoaling due to bottom and current variations; blocking and reflections by opposing currents; and transmission through or blockage by obstacles. The model also accounts for dissipation effects due to white-capping, bottom friction and wave breaking as well as non-linear wave-wave interactions. D-WAVE is fully spectral (in all directions and frequencies) and computes the evolution of wind waves in coastal regions with shallow water depths and ambient currents.

RPS has successfully applied D-WAVE in many studies in the region, including ambient condition modelling in Mermaid Sound and dredging fate projects in the wider Pilbara region.

### 2.3.2 Model Implementation

The D-WAVE model was developed to cover the same grid regions defined by the hydrodynamic model (Figure 2.1 and Figure 2.2). The bathymetry and wind data input to the wave model was the same as used for the hydrodynamic model. Time-varying water level information for each grid node in the wave model was provided by the output of the hydrodynamic model. The boundary data to represent swells imposed from a distance was sourced from the WAVEWATCH III 0.5° model, operated by the National Oceanic and Atmospheric Administration (NOAA) (NOAA, 2018).

The wave model was run in a coupled mode with the hydrodynamic model for the years of 2016 and 2017. The model results were independently validated by comparison to other modelled wave data for the Mermaid Sound region that is held internally by RPS. Given the purpose of the wave model is to provide bottom shear-stresses and orbital velocities for settlement and resuspension calculations across a large domain in the sediment dispersion model, rather than a more site-specific application such as the design of a structure, it is believed this is an acceptable level of validation.

## 3 SEDIMENT FATE MODELLING

### 3.1 General Approach

Estimates for the three-dimensional distribution of sediments suspended by dredging, disposal and backfill operations have been derived for the full duration of the pipeline dredging and backfill program using numerical modelling. The approach of modelling dredging operations in full and in three dimensions is in line with best practice for sediment dispersion modelling in Western Australia as outlined by WAMSI Dredging Science Node guidance (Sun *et al.*, 2016).

This modelling relied upon specification of sediment discharges over time for each of the expected sources of sediment suspension, and predicted the evolution of the combined sediment plumes via current transport, dispersion, sinking and sedimentation. The model allowed for the subsequent resuspension of settling sediments due to the erosive effects of currents and waves. Thus, the fate of sediments was assessed beyond their initial settling.

Forcing was provided using predictions of three-dimensional current fields and two-dimensional wave fields for the study area, which are described in Section 2.

### 3.2 Model Description

Modelling of the dispersion of suspended sediment resulting from the various dredging, disposal and backfill operations was undertaken using an advanced sediment fate model, Suspended Sediment FATE (SSFATE), operating within the RPS DREDGEMAP model framework. This model computes the advection, dispersion, differential sinking, settlement and resuspension of sediment particles. The model can be used to represent inputs from a wide range of suspension sources, producing predictions of sediment fate both over the short-term (minutes to days following a discharge source) and longer term (days to years following a discharge source).

SSFATE allows the three-dimensional predictions of SSC and seabed sedimentation to be assessed against allowable exposure thresholds. Sedimentation thresholds often relate to burial depths or rates, while SSC thresholds are usually more complicated, involving tiered exposure duration and intensities. As a result, assessing the project-generated sediment distributions against these thresholds in both three-dimensional space and time is a computationally intensive task. A variety of SSC threshold formulations have recently been applied in Western Australian coastal waters and at present there are no general guidelines.

SSFATE is a computer model originally developed jointly by the US Army Corps of Engineers (USACE) Engineer Research and Development Center (ERDC) and RPS to estimate SSC generated in the water column and deposition patterns generated due to dredging operations in a current-dominated environment, such as a river (Johnson *et al.*, 2000; Swanson *et al.*, 2000, 2004). RPS has significantly enhanced the capability of SSFATE to allow the prediction of sediment fate in marine and coastal environments where wave forcing becomes important for reworking the distribution of sediments (Swanson *et al.*, 2007).

SSFATE is formulated to simulate far-field effects (~25 m or larger scale) in which the mean transport and turbulence associated with ambient currents are dominant over the initial turbulence generated at the discharge point. A five-class particle-based model predicts the transport and dispersion of the suspended material. The classes include the 0-130 µm range of sediment grain sizes that typically result in plumes. Heavier sediments tend to settle very rapidly, remain more stable over time and are not relevant over the longer durations (>1 hour) and larger spatial scales (>25 m) of interest here. Table 3.1 shows the standard material classes used in SSFATE for suspended sediment.

**Table 3.1 Material size classes used in SSFATE.**

Material Class Description	Particle Size Range (µm)
Clay	<7
Fine Silt	7-34
Coarse Silt	35-74
Fine Sand	75-130
Coarse Sand	>130

Particle advection is calculated using three-dimensional current fields, obtained from hydrodynamic modelling, thus the model can account for vertical changes in the currents within the water column. For example, as particles sink towards the seabed they will tend to be moved at slower speeds due to the slowing of currents by friction at the seabed. Particle diffusion is assumed to follow a random walk process using a Lagrangian approach of calculating transport, which uses a grid-less space to remove limitations of grid resolution, artefacts due to grid boundaries, and also maintain a high degree of mass conservation.

Following release into the model space, the sediment cloud evolves according to the following processes:

- Advection due to the three-dimensional current field.
- Diffusion by a random walk model with the mass diffusion rate specified, ideally, from measurements at the site. As particles represent an ensemble of real particles, each particle in the model has an associated Gaussian distribution governed by particle age and the mass diffusion properties of the surrounding water.
- Settlement or sinking of the sediment due to buoyancy forces. Settlement rates are determined from the particle class sizes and include allowance for flocculation and other concentration-dependent behaviour, following the model of Teeter (2000). The SSFATE model calculates the settling velocity for four of the five classes, with a settling velocity of 0.1 m/s assumed for coarse sand (Teeter, 2000; Swanson, 2007). The settling velocities are calculated from typical values of coefficients within SSFATE. The formulas used to calculate settling velocities, and the typical values of coefficients from the formulas, are presented below.

$$\text{If } C \geq \bar{C}_{ul} \text{ then}$$

$$W_{s_i} = a$$

$$\text{If } C \leq \bar{C}_{ll} \text{ then}$$

$$W_{s_i} = a \left( \frac{\bar{C}_{ll}}{\bar{C}_{ul}} \right)^{n_i}$$

Where:

- $C_{uli}$  and  $C_{lli}$  are the nominal upper and lower concentration limits, respectively, for enhanced settling of grain class  $i$ , and  $C$  is the total concentration for all grain size classes (except coarse sand).
- $a_i$  is a grain-size class average maximum floc settling velocity.
- $n_i$  is a grain-size dependent exponent.

**Table 3.2 Typical values of coefficients for calculating settling velocities in SSFATE.**

Sediment Grain Size Class	Size Range (µm)	$C_{lli}$ (mg/L)	$C_{uli}$ (mg/L)	$a_i$ (m/s)	$n_i$
Clay	<7	50	1,000	0.0008	1.33
Fine Silt	7-34	150	3,000	0.0023	1.10
Coarse Silt	35-74	250	5,000	0.0038	0.90
Fine Sand	75-130	400	8,000	0.0106	0.80

- Potential deposition to the seabed determined using a model that couples the deposition across particle classes (Teeter, 2000). The likelihood and rate of deposition depends on the shear stress at the seabed. High shear inhibits deposition, and in some cases excludes it altogether with sediment remaining in suspension. The model allows for partial deposition of individual particles according to a practical deposition rate, thereby allowing the bulk sediment mass to be represented by fewer particles.
- Potential resuspension from the seabed, if previously deposited, at a rate governed by exceedance of a shear stress threshold at the seabed due to the combined action of waves and currents. Different thresholds are applied for resuspension depending upon the size of the particle and the duration of sedimentation, based on empirical studies that have demonstrated that newly-settled sediments will have higher water content and are more easily resuspended by lower shear stresses (Swanson *et al.*, 2007).

The resuspension flux calculation also accounts for armouring of fine particles within the interstitial spaces of larger particles. Thus, the model can indicate whether deposits will stabilise or continue to erode over time given the shear forces that occur at the site. Resuspended material is released back into the water column to be affected by the processes defined above.

SSFATE formulations and proof of performance have been documented in a series of USACE Dredging Operations and Environmental Research (DOER) Program technical notes (Johnson *et al.*, 2000; Swanson *et al.*, 2000), and published in the peer-reviewed literature (Andersen *et al.*, 2001; Swanson *et al.*, 2004; Swanson *et al.*, 2007). SSFATE has been applied and validated by RPS against observations of sedimentation and suspended sediments at multiple locations in Australia, notably Cockburn Sound for Fremantle Ports and Mermaid Sound for the LNG Foundation Project dredging program.

### 3.3 Model Limitations

There are inherent limitations to the accuracy of numerical models. The possible sources of uncertainty within the modelling conducted for the sediment fate assessment of the Scarborough development include:

- *The equations and algorithms applied in the model.* The formulations included in the model, as discussed in Section 3.2, were selected to achieve the best possible representation of the relevant processes and have been proven to be valid over a range of projects.
- *The accuracy of the physical (current and wave) inputs to the model.* Current and wave forcing inputs were provided from validated three-dimensional hydrodynamic and wave models created and customised for the study area. The accuracy of these models is suitable, as good correlations with field measurements and independent model predictions have been achieved, with the uncertainties minimised and quantifiable. The hydrodynamic and wave models are described in Section 2. It should be noted that the model inputs are a hindcast of past metocean conditions; the overall trends reflected in this data will be broadly reflected in future conditions, but conditions on any given day during the actual dredging operations may be quite different.
- *The accuracy of dredge methodology inputs to the model.* Specification of the proposed dredge and disposal methodologies was provided by Woodside after consultation with the dredging contractor engaged to perform the work (Boskalis). Any assumptions made to achieve a realistic representation of the dredging and disposal activities are outlined in Section 3.5 and were based on extensive past project experience.
- *The accuracy of the material properties input to the model.* Geotechnical information obtained during site investigations for the Scarborough development (Advisian, 2019a; Fugro, 2019) and during previous site investigations for the LNG Foundation Project (Coffey, 2007) was provided by Woodside and is discussed in Section 3.6. From this data, the properties of the *in situ* material to be dredged are reasonably well-known. However, it is not possible to determine how the material properties will be changed by the action of the dredges and the mixing of the material with seawater in the process of pumping it to the hopper. Therefore, assumptions were made in the model with regard to the material that is released into the water column from dredging and the material properties of the sediments that are to be placed at the spoil grounds.
- *The accuracy of the dredging and disposal sediment source terms input to the model.* The source definition in the model is flexible and can be applied to any sediment source by specifying the time-varying flux rate, particle size distribution (PSD) and vertical profile in the water column. This information will be specific to the equipment used and the material encountered at the site, and therefore can only be determined with confidence from a pilot study at the site or field measurements during dredging. In the absence of such data, conservative assumptions were made with regard to these parameters. The assumptions are outlined in Section 3.7 and were based on literature review, including the recent WAMSI Dredging Science Node reports, and extensive past project experience.

The major sources of uncertainty for the sediment fate modelling are the modelled dredging methodology and sediment source inputs to the model. The assumptions made were based on literature review and experience, and aimed to give a good representation of the sources of suspended sediment that will result from the proposed dredging, disposal and backfill activities. However, as there were uncertainties in the inputs to the model, the results should be considered as indicative of the expected ranges in magnitude and distribution of suspended sediments and sedimentation, rather than an exact prediction.

### 3.4 Model Domain and Bathymetry

The DREDGEMAP model domain established for the Scarborough dredging works extended approximately 89 km north-south by 125 km east-west (Figure 3.1). The model grid covers the section of the Western Australian coastline from Cape Preston in the west to Point Samson in the east. The offshore boundaries of the domain were imposed at a reasonable distance from the proposed dredging areas, to allow potential sediment drift patterns in offshore directions to be adequately captured.

This region lies within the model domain of the Delft3D hydrodynamic and wave models that provide the current and wave inputs to DREDGEMAP (see Section 2). A grid resolution of 100 m by 100 m was selected to ensure that existing features in the domain, including the many bays, islands and passages of the Dampier Archipelago, were adequately defined.



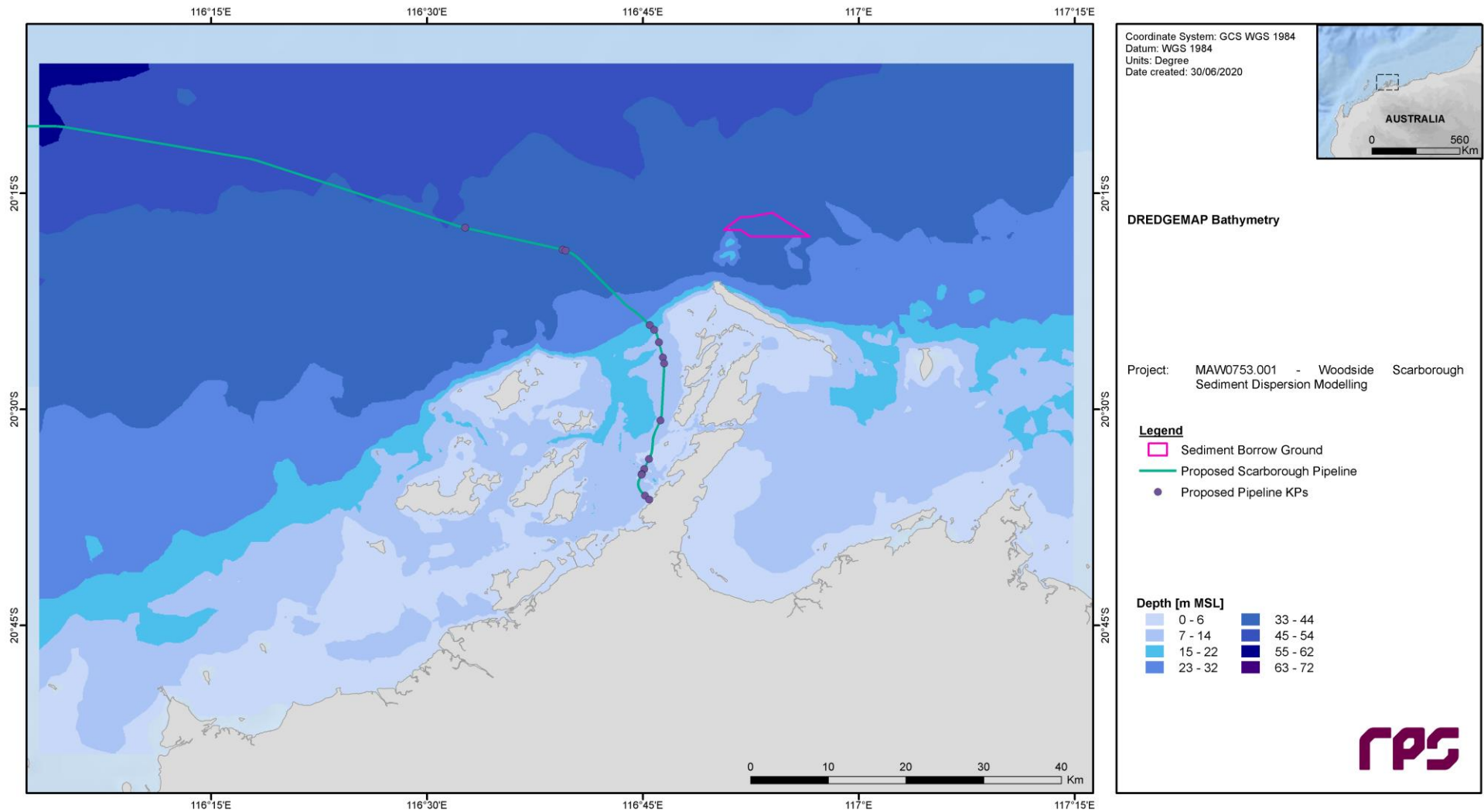


Figure 3.1 DREDGEMAP model domain and bathymetry (m MSL).



## 3.5 Dredging Project Description and Model Operational Assumptions

### 3.5.1 Overview

Information outlining the proposed dredging, disposal and backfill operations for the development of Scarborough has been drawn from input data provided by Woodside and its dredging contractor (Woodside, 2020), and subsequent meetings and email discussions. At the time of commencement of modelling, the collated information represented the best available data with regard to geotechnical properties of the project areas, the dredging and construction methodologies expected to be used within these areas, and the characteristics of vessels planned to be engaged for the work.

The operations modelled have been broken into two phases with four main activities:

- Phase 1 (Dredging):
  - Dredging of sediment along the pipeline route.
  - Disposal of dredged sediment at three nominated spoil grounds.
- Phase 2 (Backfilling):
  - Dredging of the borrow ground.
  - Backfill and stabilisation of the pipeline.

The pipeline route, spoil grounds and borrow ground will cover State and Commonwealth Waters (Figure 1.1).

The following sections outline the details of the operations for each of these activities and highlight any assumptions that were made.

### 3.5.2 Methods and Equipment

#### 3.5.2.1 Pipeline Route Dredging

The material to be dredged from the pipeline route will consist mainly of marine sediments (approximately 1.80 Mm<sup>3</sup>) and marine sediment/coarse material mix (approximately 0.07 Mm<sup>3</sup>).

The dredging operations for the pipeline route have been divided into twelve sections as outlined in Table 3.3, with nine of these sections requiring dredging. The breakdown of the proposed dredging activities, including the locations of the pipeline KPs and spoil grounds, are shown in Figure 3.2. The dredging in each of the nine sections was assumed to be completed with either a backhoe dredge (BHD) or a trailing suction hopper dredge (TSHD). Typically, a TSHD will dredge unconsolidated sediments and a BHD will dredge sedimentary rock, and the quantities of each material type assumed in this case are detailed in Section 3.5.3. The assumed BHD bucket size was in the range of 20 m<sup>3</sup> (rock) to 30 m<sup>3</sup> (general purpose), while the TSHD hopper size was assumed to be 12,000 m<sup>3</sup>. It has been specified that overflow of fines from the TSHD hopper will be permitted, with a 'green valve' incorporated into the overflow system, but that dewatering of the split hopper barges that accompany the BHD will not occur.

The estimated cycle times for dredging within each pipeline section where the BHD will operate are presented in Table 3.4, and those for each pipeline section where the TSHD will operate are presented in Table 3.5.

The potential for sediment mobilisation by TSHD propeller-wash effects has been considered along all relevant pipeline sections. This has been done using supplied data on vessel characteristics, and local depth and seabed composition. For the purposes of the modelling assessment, the relevant specifications were as follows:

- Vessel draft: 10.0 m loaded and 6.0 m empty.
- Number of propellers: 2 (ducted).
- Diameter of propellers: 4.0 m.
- Thrust power: 5,800 kW per propeller.

**Table 3.3 Provisional outline of proposed pipeline dredging and disposal activities.**

Pipeline Zone	Pipeline Location	Vessel	Task Description	Disposal Location
PRE1	KP0.072 – KP0.8	BHD & barges	Dredging of a 3.5 m deep trench. Dredging of pre-treated sediment if required.	AB
PRE2	KP0.8 – KP3.9	BHD & barges	Dredging of a 3.5-4.0 m deep trench.	AB
		TSHD		2B
PRE3	KP3.9 – KP4.6	TSHD	Clearing out of a pre-excavated trench across the NWS Shipping Channel.	2B
PRE4	KP4.6 – KP6.0	BHD & barges	Dredging of a 3.0 m deep trench.	AB
		TSHD		2B
PRE5	KP6.0 – KP11.2	N/A	No dredging.	N/A
PRE6	KP11.2 – KP18.5	TSHD	Dredging of a 2.0-3.0 m deep trench.	2B
PRE7	KP18.5 – KP19.3	N/A	No dredging.	N/A
PRE8	KP19.3 – KP21.3	TSHD	Dredging of a 2.5-3.0 m deep trench.	2B
PRE9A	KP21.3 – KP23.0	N/A	No dredging.	N/A
PRE9B	KP23.0 – KP23.8	TSHD	Dredging of an 800 m section of trench.	2B
PRE10A	KP23.8 – KP38.2	TSHD	Dredging of a 2.5-3.5 m trench along sections with unconsolidated sediment.	2B
				5A
PRE10B	KP38.2 – KP50.3	TSHD	Dredging of a 2.5-3.5 m trench along sections with unconsolidated sediment.	5A

**Table 3.4 Estimated cycle times for each pipeline section where the BHD will be operating.**

Pipeline Zone	Non-Dewatering Time (min)	Dewatering Time (min)	Disposal Time (min)	Sailing Time (min)	Total Cycle Time (min)
PRE1	354	N/A	15	90	459
PRE2	734	N/A	15	85	834
PRE4	734	N/A	15	75	824

**Table 3.5 Estimated cycle times for each pipeline section where the TSHD will be operating.**

Pipeline Zone	Non-Overflow Time (min)	Overflow Time (min)	Disposal Time (min)	Sailing Time (min)	Total Cycle Time (min)
PRE2	20	169	15	130	334
PRE3	20	169	15	125	329
PRE4	20	169	15	120	324
PRE6	20	169	15	70	274
PRE8	20	169	15	48	252
PRE9B	20	169	15	33	237
PRE10A	20	169	15	20	224
PRE10B	20	169	15	20	224

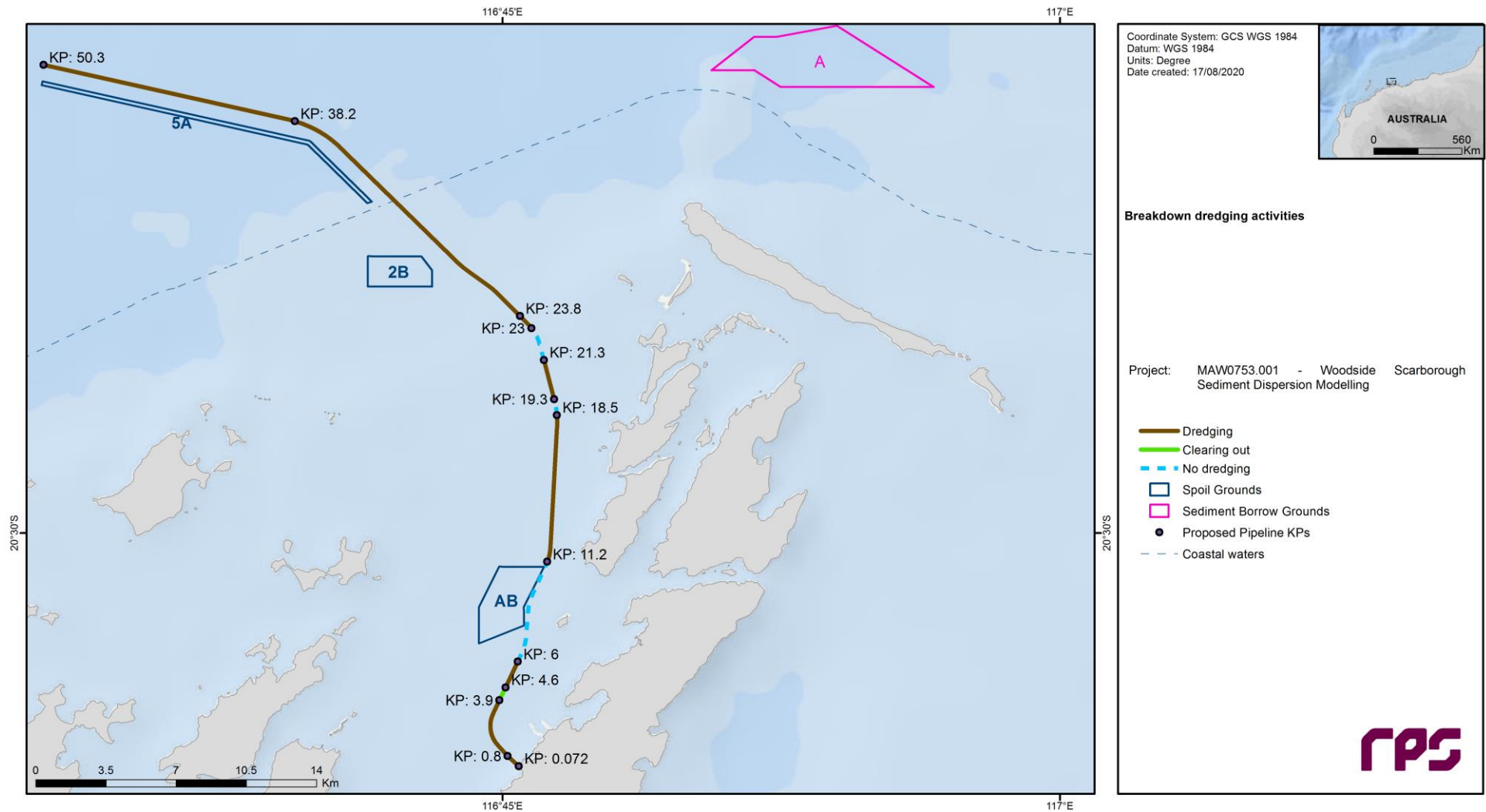


Figure 3.2 Breakdown of proposed dredging activities showing the pipeline KPs and locations of the existing spoil grounds (AB, 2B and 5A) that will be utilised during disposal activities.

### 3.5.2.2 Spoil Ground Disposal

As outlined in Table 3.3, it was assumed that all material dredged by the BHD will be placed into a waiting split hopper barge and transported to the offshore disposal areas (shown in Figure 3.2), while all material dredged by the TSHD will be transported directly to the offshore disposal areas.

It was assumed that the BHD will be accompanied by two split hopper barges, assumed to be approximately 3,800 m<sup>3</sup> in capacity, to be used for disposal of dredged material. Material discharges from the split hopper barges were assumed to occur between depths of 5.8 m and 1.5 m below mean sea level.

The TSHD hopper doors, from which discharge will occur, were assumed to be opened at a depth of 12.75 m below sea level. The modelled vessel draft will be reduced as spoil is discharged to a minimum depth of 8.75 m below sea level when empty.

The split hopper barges will be pushed or towed by a harbour tug. The potential for sediment mobilisation by tug propeller-wash effects has been considered along all relevant pipeline sections. This has been done using supplied data on vessel characteristics, and local depth and seabed composition. For the purposes of the modelling assessment, the relevant specifications were as follows:

- Vessel draft: 4.5 m (tug).
- Number of propellers: 2 (ducted).
- Diameter of propellers: 2.5 m.
- Thrust power: 1,850 kW per propeller.

The allocations of dredge spoil from each pipeline section to each spoil ground are shown in Table 3.6. It was assumed that the broad aim of the spoil disposal patterns will be to evenly distribute the total volume of allocated material across the entire spoil ground area by the conclusion of all activities, so the spacing of individual disposal operations (which are restricted to a comparatively small area within the spoil ground) was designed to achieve this.

**Table 3.6 Anticipated spoil ground allocations of dredge volumes from each pipeline section.**

Spoil Ground	Pipeline Zone	Spoil Volume (m <sup>3</sup> )	Spoil Ground Area (m <sup>2</sup> )	Theoretical Thickness (m)
AB	PRE1, 2 & 4	90,000	4,000,000	0.13
2B	PRE2, 3, 4, 6, 8, 9B & 10A	1,035,772	2,600,000	0.16
5A	PRE10A & 10B	741,087	3,200,000	0.29

### 3.5.2.3 Borrow Ground Dredging

Dredging of backfill material from the borrow ground locations will consist of the removal of approximately 1.98 Mm<sup>3</sup> of sandy sediments with a low proportion of fines.

It was assumed that dredging of borrow ground A (Figure 3.3) will be conducted using a TSHD. The TSHD hopper size was assumed to be 12,000 m<sup>3</sup> (filled at a rate of approximately 90 m<sup>3</sup>/min). It has been specified that overflow of fines from the TSHD hopper will be permitted.

The estimated cycle times for TSHD dredging within borrow ground A and placement of material within each pipeline section are presented in Table 3.7.

The potential for sediment mobilisation by TSHD propeller-wash effects has been considered at the borrow ground. This has been done using supplied data on vessel characteristics, and local depth and seabed composition. For the purposes of the modelling assessment, the relevant specifications were as follows:

- Vessel draft: 10.0 m loaded and 6.0 m empty.
- Number of propellers: 2 (ducted).

- Diameter of propellers: 4.0 m.
- Thrust power: 5,800 kW per propeller.

**Table 3.7 Estimated cycle times for each pipeline section where the TSHD will be placing material dredged from borrow ground A.**

Pipeline Zone	Non-Overflow Time (min)	Overflow Time (min)	Placement Time (min)	Sailing Time (min)	Total Cycle Time (min)
POST2	20	94	107	225	446
POST4	20	119	107	204	450
POST6	20	119	107	145	391
POST8	20	119	107	123	369
POST9B	20	119	107	123	369
POST10A	20	119	107	133	379
POST10B	20	119	107	133	379

### 3.5.2.4 Pipeline Route Backfill

The backfill operations for the pipeline route have been divided into twelve sections as outlined in Table 3.8. The breakdown of the proposed backfill activities, including the locations of the pipeline KPs and the backfill material type to be placed along each pipeline section, are shown in Figure 3.3. It was assumed that rock backfill will be placed by a side-dump vessel and sand backfill will be placed by a TSHD.

The side-dump vessel was assumed to have a capacity of 4,500 tonnes with an average installation rate of approximately 2,250 tonnes/hr, with rock dumped from a fixed height at the sea surface. The TSHD hopper size was assumed to be 12,000 m<sup>3</sup> (emptied at a rate of approximately 90 m<sup>3</sup>/min), with sand discharged through the suction pipe at an elevation of approximately 5 m above the pipeline.

The potential for sediment mobilisation by TSHD and side-dump vessel propeller-wash effects has been considered along the relevant pipeline sections. This has been done using supplied data on vessel characteristics, and local depth and seabed composition. For the purposes of the modelling assessment, the relevant specifications were as follows:

- Vessel draft:
  - 10.0 m loaded and 6.0 m empty (TSHD).
  - 4.8 m loaded (side-dump vessel).
- Number of propellers:
  - 2 (ducted; TSHD).
  - 2+2 (ducted; side-dump vessel).
- Diameter of propellers:
  - 4.0 m (TSHD).
  - 2.5 m (side-dump vessel).
- Thrust power:
  - 5,800 kW per propeller (TSHD).
  - 2 x 1,250 kW and 2 x 1,000 kW (side-dump vessel).

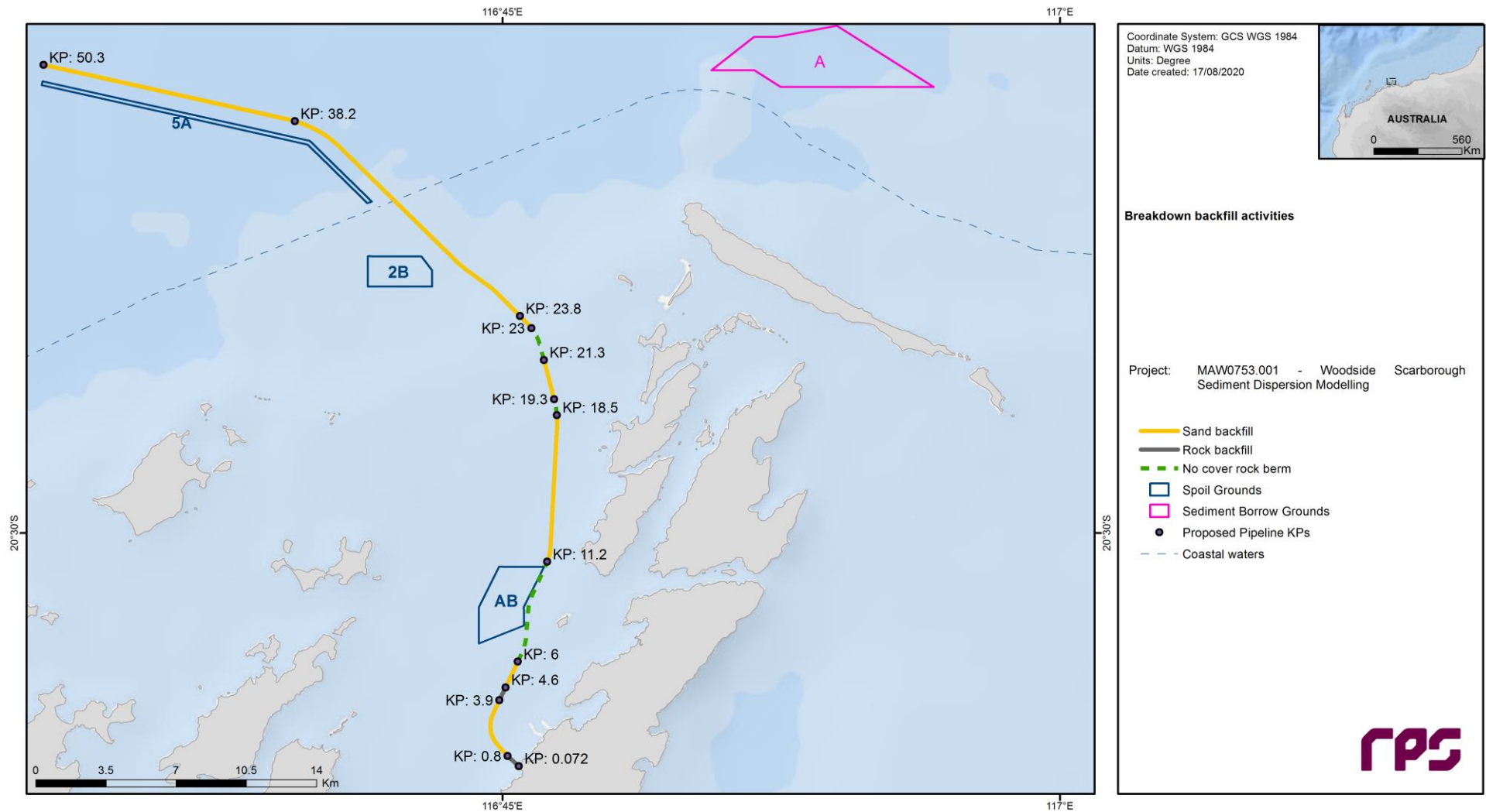


Figure 3.3 Breakdown of proposed backfill activities showing the pipeline KPs, the backfill material type to be placed along each pipeline section, and the location of borrow ground A where sand backfill material is to be sourced.



**Table 3.8 Provisional outline of proposed pipeline backfill and stabilisation activities.**

Pipeline Zone	Pipeline Location	Vessel	Task Description	Borrow Location
POST1	KP0.072 – KP0.8	Side-dump vessel	Rock backfill (1.2-2.0 m cover over top of pipe).	Rock from the Nickol Bay Quarry.
POST2	KP0.8 – KP3.9	TSHD	Sand backfill ( $\geq 3.0$ m cover over top of pipe).	Sand from borrow ground A.
POST3	KP3.9 – KP4.6	Side-dump vessel	Rock backfill (2.0 m cover over top of pipe).	Rock from the Nickol Bay Quarry.
POST4	KP4.6 – KP6.0	TSHD	Sand backfill (1.7-2.5 m cover over top of pipe).	Sand from borrow ground A.
POST5	KP6.0 – KP11.2	Side-dump vessel	No cover rock berm (flush to top of pipe).	Rock from the Nickol Bay Quarry.
POST6	KP11.2 – KP18.5	TSHD	Sand backfill (0.8-1.7 m cover over top of pipe).	Sand from borrow ground A.
POST7	KP18.5 – KP19.3	Side-dump vessel	No cover rock berm (flush to top of pipe).	Rock from the Nickol Bay Quarry.
POST8	KP19.3 – KP21.3	TSHD	Sand backfill (1.2-1.7 m cover over top of pipe).	Sand from borrow ground A.
POST9A	KP21.3 – KP23.0	Side-dump vessel	No cover rock berm (flush to top of pipe).	Rock from the Nickol Bay Quarry.
POST9B	KP23.0 – KP23.8	TSHD	Sand backfill of an 800 m section of trench.	Sand from borrow ground A.
POST10A	KP23.8 – KP38.2	TSHD	Sand backfill (0.7-1.7 m cover over top of pipe).	Sand from borrow ground A.
POST10B	KP38.2 – KP50.3	TSHD	Sand backfill (0.7-1.7 m cover over top of pipe).	Sand from borrow ground A.

### 3.5.3 Quantities and Production Rates

For dredging of each section along the pipeline route, the proposed dredge depths, quantities for each material type, and production rates for each material type were specified for input to the modelling (Table 3.9). The stated quantities include allowances for overdredge and contingency; hence, they are conservative volume estimates. The table has two material categories, defined as “soft” (unconsolidated sediments) and “moderate” (calcareous sedimentary rock). It is understood that no “hard” material (andesite igneous rock) will be present due to its removal during capital dredging activities for the LNG Foundation Project.

For sand backfill of each relevant section along the pipeline route, which involves dredging of borrow ground A, the proposed quantities and production rates for each material type were specified for input to the modelling (Table 3.10). The sole material category within borrow ground A was assumed to be unconsolidated sediments (“soft” material).

For rock backfill sections where rock is to be placed, quantities for each material category were specified (Table 3.11).

It is understood that:

- The estimated material quantities (inclusive of overdredge and contingency) were based on the latest surveyed bathymetry and a geotechnical model incorporating existing geotechnical data.
- The estimated production rates were based on the material type and equipment that may be used for dredging.
- The estimated production rates were average values inclusive of expected downtime estimates. The average production rates were specified by the dredging contractor based on its extensive past project experience and are a combination of: (i) the bulk rate; (ii) a reduced rate when approaching design; and (iii) spot hunting when the design is reached within the majority of the dredge footprint.



**Table 3.9 Modelled dredge depths, quantities of material type, and production rates by material type for dredging of each pipeline section.**

Pipeline Zone	Dredge Depth (m CD)	Dredged Quantities (m <sup>3</sup> )			Production Rates (m <sup>3</sup> /week)	
	Target	Soft Material	Moderate Material	Total	Soft Material	Moderate Material
PRE1	+4.3 / -5.5	-	47,100	47,100	-	15-20,000
PRE2	-13.1 / -11.1	240,778	8,884	249,662	250,000	15-20,000
PRE3	-10.7 / -18.6	131,992	-	131,992	250,000	-
PRE4	-9.7 / -11.3	110,598	4,876	115,474	250,000	15-20,000
PRE6	-13.0 / -16.0	208,844	800	209,644	250,000	15-20,000
PRE8	-14.4 / -17.7	48,200	5,500	53,700	250,000	15-20,000
PRE9B	-14.4 / -17.7	18,200	-	18,200	250,000	-
PRE10A	-24.0 / -44.9	486,100	-	486,100	250,000	-
PRE10B	-24.0 / -44.9	554,987	-	554,987	250,000	-
<b>Totals</b>		<b>1,799,699</b>	<b>67,160</b>	<b>1,866,859</b>	<b>-</b>	<b>-</b>

**Table 3.10 Modelled quantities of material type and production rates by material type for dredging of sand backfill material for each pipeline section from borrow ground A.**

Pipeline Zone	Dredged/Backfill Quantities (m <sup>3</sup> )	Production Rates (m <sup>3</sup> /week)
	Soft Material	Soft Material
POST2	272,537	300,000
POST4	131,223	300,000
POST6	299,069	300,000
POST8	78,200	300,000
POST9B	26,500	300,000
POST10A	599,575	300,000
POST10B	572,237	300,000
<b>Totals</b>	<b>1,979,341</b>	<b>-</b>

**Table 3.11 Modelled quantities of material type for placement of rock backfill material within each pipeline section.**

Pipeline Zone	Backfill Quantities (m <sup>3</sup> )
	Rock Material
POST1	9,976
POST3	30,374
POST5	16,416
POST7	5,580
POST9A	10,980
<b>Totals</b>	<b>73,326</b>

### 3.5.4 Schedules

For dredging of each section along the pipeline route, the proposed duration and sequencing of operations has been specified for input to the modelling (Table 3.12 and Table 3.13). Table 3.12 has two material categories, as described in Section 3.5.3.

The modelled sequence of dredging has been specified to represent a worst-case scenario where the TSHD and BHD operate concurrently, as outlined in Table 3.13. The TSHD modelled sequence starts in zone PRE2, moving to zone PRE4, then zone PRE3 and then proceeds consecutively from zone PRE6 to zone PRE10B. The BHD modelled sequence starts in zone PRE2 following completion of the TSHD works in PRE2, then moves to zone PRE4 and then zone PRE1 last. Modelling of each section involves a series of dredging and related disposal activities. Allocations of spoil material from each pipeline section to each of the three spoil grounds are outlined in Table 3.3.

For backfill of each section along the pipeline route, the proposed duration and sequencing of operations has been specified for input to the modelling (Table 3.14). The table has two material categories, as described in Section 3.5.3.

The sequence of backfilling has been assumed to involve completing all sand backfill tasks (proceeding consecutively from zone POST2 to zone POST10B) and then completing all rock backfill tasks (proceeding consecutively from zone POST1 to zone POST9B). Modelling of each section involves a series of dredging and related backfill activities. For the pipeline sections where rock backfill will be placed, no associated borrow ground dredging will occur.

**Table 3.12 Modelled durations of dredging and disposal operations by material type for each pipeline section.**

Pipeline Zone	Duration of Operations (weeks)	
	Soft Material	Moderate Material
PRE1	-	2.69
PRE2	0.96	0.51
PRE3	0.53	-
PRE4	0.44	0.28
PRE6	0.84	0.05
PRE8	0.19	0.31
PRE9B	0.07	-
PRE10A	1.94	-
PRE10B	2.22	-
<b>Totals</b>	<b>7.19</b>	<b>3.84</b>

**Table 3.13 Modelled sequencing of dredging and disposal operations assuming concurrent TSHD and BHD operation.**

Week	TSHD			BHD			Comments
	Pipeline Zone	Pipeline Location	Duration (weeks)	Pipeline Zone	Pipeline Location	Duration (weeks)	
1	PRE2	KP0.8 – KP3.9	0.96	-	-	-	-
2	PRE4	KP4.6 – KP6.0	0.44	PRE2	KP0.8 – KP3.9	0.51	BHD dredging follows completion of TSHD works in zone PRE2.
	PRE3	KP3.9 – KP4.6	0.53	PRE4	KP4.6 – KP6.0	0.28	BHD dredging follows completion of TSHD works in zone PRE4.
3	PRE6	KP11.2 – KP18.5	0.89	PRE1	KP0.072 – KP0.8	2.69	Most complex section for BHD dredging, to be undertaken last.
4	PRE8	KP19.3 – KP21.3	0.50				
	PRE9B	KP23.0 – KP23.8	0.07				
4, 5 & 6	PRE10A	KP23.8 – KP38.2	1.94				
6 & 7	PRE10B	KP38.2 – KP50.3	2.22	-	-	-	-
<b>Totals</b>	-	-	<b>7.55</b>	-	-	<b>3.48</b>	-

**Table 3.14 Modelled durations of dredging and backfill operations by material type for each pipeline section.**

Pipeline Zone	Duration of Operations (weeks)		
	Sand Material	Rock Material	Total
POST1	-	0.40	0.40
POST2	1.82	-	1.82
POST3	-	1.20	1.20
POST4	0.87	-	0.87
POST5	-	0.70	0.70
POST6	1.99	-	1.99
POST7	-	0.20	0.20
POST8	0.52	-	0.52
POST9A	-	0.50	0.50
POST9B	0.18	-	0.18
POST10A	4.00	-	4.00
POST10B	3.81	-	3.81
<b>Totals</b>	<b>13.19</b>	<b>3.00</b>	<b>16.19</b>

### 3.5.5 Scenario Summary

The provisional schedule for the dredging works indicates a July 2021 start for dredging of the pipeline route followed by a December 2021 start for backfill and stabilisation works. Analysis of wind data in the region from 1993-2017 has shown that the period of 2016-2017 is likely to be representative of typical conditions. The dredge modelling simulations were conducted using hydrodynamic and wave data drawn from this period, with nominal start dates for model simulation purposes being chosen as 1<sup>st</sup> July 2016 (winter) and 1<sup>st</sup> January 2017 (summer).

A summary of the scenarios that were modelled is as follows:

- Scenario 1: dredging works to commence on 1<sup>st</sup> July 2016 (winter start):
  - TSHD dredging and disposal operations were programmed to occur between 1<sup>st</sup> July 2016 and 22<sup>nd</sup> August 2016.
  - BHD dredging and disposal operations were programmed to occur between 7<sup>th</sup> July 2016 and 4<sup>th</sup> August 2016.
  - A simulation run-on period was assumed to occur between 22<sup>nd</sup> August 2016 and 1<sup>st</sup> December 2016. Sediments suspended in the water column during previous operations were subject to settlement and progressively-reducing levels of resuspension during this time.
  - TSHD dredging and sand backfill operations were programmed to occur between 1<sup>st</sup> December 2016 and 3<sup>rd</sup> March 2017.
  - Side-dump vessel rock backfill operations were programmed to occur between 3<sup>rd</sup> March 2017 and 24<sup>th</sup> March 2017.
  - A further simulation run-on period was assumed to occur between 24<sup>th</sup> March 2017 and 23<sup>rd</sup> May 2017. Sediments suspended in the water column during previous operations were subject to settlement and progressively-reducing levels of resuspension during this time.
- Scenario 2: dredging works to commence on 1<sup>st</sup> January 2017 (summer start):
  - TSHD dredging and disposal operations were programmed to occur between 1<sup>st</sup> January 2017 and 22<sup>nd</sup> February 2017.
  - BHD dredging and disposal operations were programmed to occur between 7<sup>th</sup> January 2017 and 4<sup>th</sup> February 2017.
  - A simulation run-on period was assumed to occur between 22<sup>nd</sup> February 2017 and 1<sup>st</sup> June 2017. Sediments suspended in the water column during previous operations were subject to settlement and progressively-reducing levels of resuspension during this time.
  - TSHD dredging and sand backfill operations were programmed to occur between 1<sup>st</sup> June 2017 and 1<sup>st</sup> September 2017.
  - Side-dump vessel rock backfill operations were programmed to occur between 1<sup>st</sup> September 2017 and 22<sup>nd</sup> September 2017.
  - A further simulation run-on period was assumed to occur between 22<sup>nd</sup> September 2017 and 21<sup>st</sup> November 2017. Sediments suspended in the water column during previous operations were subject to settlement and progressively-reducing levels of resuspension during this time.

The outcomes of the summer-start and winter-start scenarios have been analysed and presented separately, for comparison.

### 3.6 Geotechnical Information

The dredged material from the pipeline route will consist mainly of marine sediments (approximately 1.80 Mm<sup>3</sup>) and marine sediment/coarse material mix (approximately 0.07 Mm<sup>3</sup>). The backfill material to be dredged from borrow ground A will consist of the removal of approximately 1.98 Mm<sup>3</sup> of sandy sediments with a low proportion of fines.

The critical geotechnical information required as input to the modelling is: (i) PSD data for the sediments to be dredged along the pipeline route; (ii) PSD data for the sediments to be dredged from borrow ground A; and (iii) PSD data for the quarry rock material.

The PSD data used in the modelling was specified by Woodside (2020) for each pipeline zone to be dredged (see Table 3.3) and for the sand backfill from borrow ground A. The specified PSD for each zone was determined based on an average of the PSD results of all samples taken within each zone during site investigations for the Scarborough development (Advisian, 2019a; Fugro, 2019). An example of a calculated average PSD plotted over the corresponding set of raw PSD sample data within zone PRE3 is shown in Figure 3.6. The geotechnical sampling points from which PSDs were acquired within each zone and within borrow ground A are summarised in Table 3.15, including reference to the relevant geotechnical investigation and the total number of PSD samples used to determine the average. The locations of the geotechnical sampling

points from the Advisian (2019a) and Fugro (2019) site investigations are shown in Figure 3.4 and Figure 3.5, respectively.

It should be noted that the Advisian (2019a) sampling points were all surface sediment samples which typically contained higher fines content than samples taken below the surface. Therefore, to be conservative, where possible the Advisian (2019a) PSD sample data was selected for use in defining the PSDs for modelling.

The resultant PSDs for each pipeline section and borrow ground A have been redistributed to match the material size classes used in the DREDGEMAP model, as shown in Table 3.16 and Table 3.17.

For the rock backfill operations, in the absence of grading information it has been conservatively assumed that the fraction of material within the quarry rubble classified as “fines” in this context (diameters less than 100 mm) will be 5% of the total volume. From experience, this is a typical upper limit for the “fines” fraction of well-graded limestone rubble, with the breakdown of this figure into smaller size classes usually unknown. Although the most conservative approach would be to further assume that all of the “fines” material is potentially available for resuspension into the water column, the assumed PSD has been heavily slanted towards the least-mobile coarse sand (>130 µm) category to account for the typically minimal proportion of the finest material categories. The chosen PSD is shown in Table 3.18.

In addition to PSD information, data and assumptions relating to the dry bulk density of the material to be dredged from the pipeline route and borrow ground, and of the quarry rock material, was used as input to the modelling.

Dry bulk density information for the project area was available from a geotechnical study conducted by Fugro for the Scarborough development (Fugro, 2019) and from a previous geotechnical study conducted in the vicinity of the project area for the LNG Foundation Project (Coffey, 2007). The Fugro investigation presented ‘low-estimate’, ‘best-estimate’ and ‘high-estimate’ dry bulk density values along the trunkline and within the borrow ground. The high-estimate values were adopted as input to the modelling, as these values are most conservative in terms of sediment mass and also lie within the range of values presented in the earlier Coffey report. The dry bulk density values applied to each zone are outlined in Table 3.19. For the quarry rock material, a conservative dry bulk density value of 1,950 kg/m<sup>3</sup> was assumed based on learnings from the Pluto LNG Foundation Project, which utilised rock from the Nickol Bay quarry (located between Dampier and Karratha, Western Australia).

**Table 3.15 Summary of geotechnical data used in the derivation of model PSDs for each pipeline zone and borrow ground A.**

Pipeline Zone	Pipeline Location	Source Study	No. of PSD Samples	Location Figure
PRE1	KP0.072 – KP0.8	KP0.0 – KP3.6 (Advisian, 2019a)	35	Figure 3.4
PRE2	KP0.8 – KP3.9			
PRE3	KP3.9 – KP4.6	KP3.6 – KP4.6 (Advisian, 2019a)	8	Figure 3.4
PRE4	KP4.6 – KP6.0	KP4.6 – KP6.2 (Advisian, 2019a)	2	Figure 3.4
PRE6	KP11.2 – KP18.5	KP11.0 – KP15.0 (Advisian, 2019a)	21	Figure 3.4
PRE8	KP19.3 – KP21.3	KP18.0 – KP23.8 (Fugro, 2019)	3	Figure 3.5
PRE9B	KP23.0 – KP23.8	KP23.2 – KP23.8 (Fugro, 2019)	2	Figure 3.5
PRE10A	KP23.8 – KP38.2	KP23.8 – KP38.1 (Fugro, 2019)	10	Figure 3.5
PRE10B	KP38.2 – KP50.3	KP38.2 – KP50.0 (Fugro, 2019)	4	Figure 3.5
Borrow Ground A	N/A	Sand Search Area (Fugro, 2019)	5	Figure 3.5



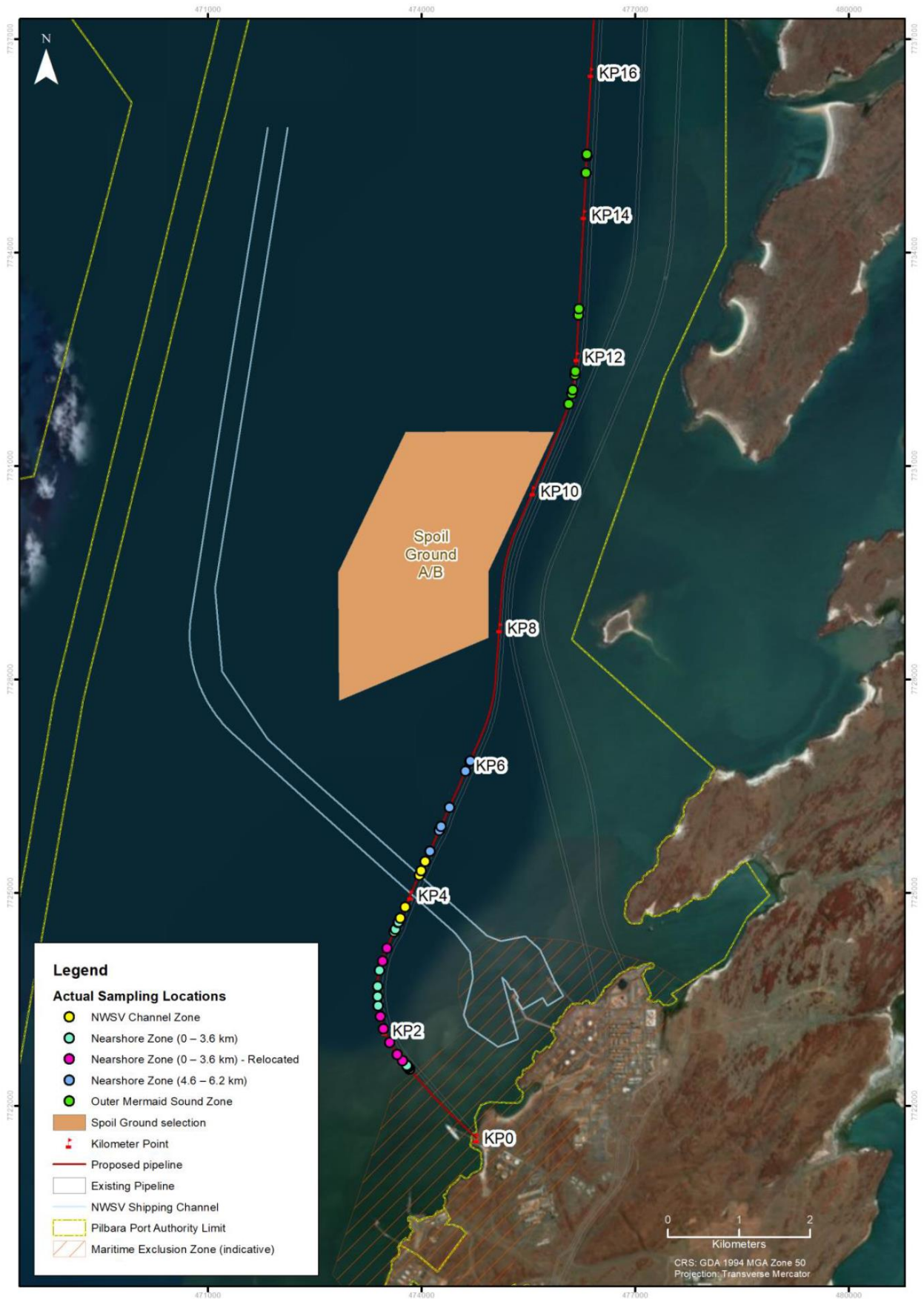


Figure 3.4 SAP implementation actual sampling locations, March 2019 (source: Advisian, 2019b).

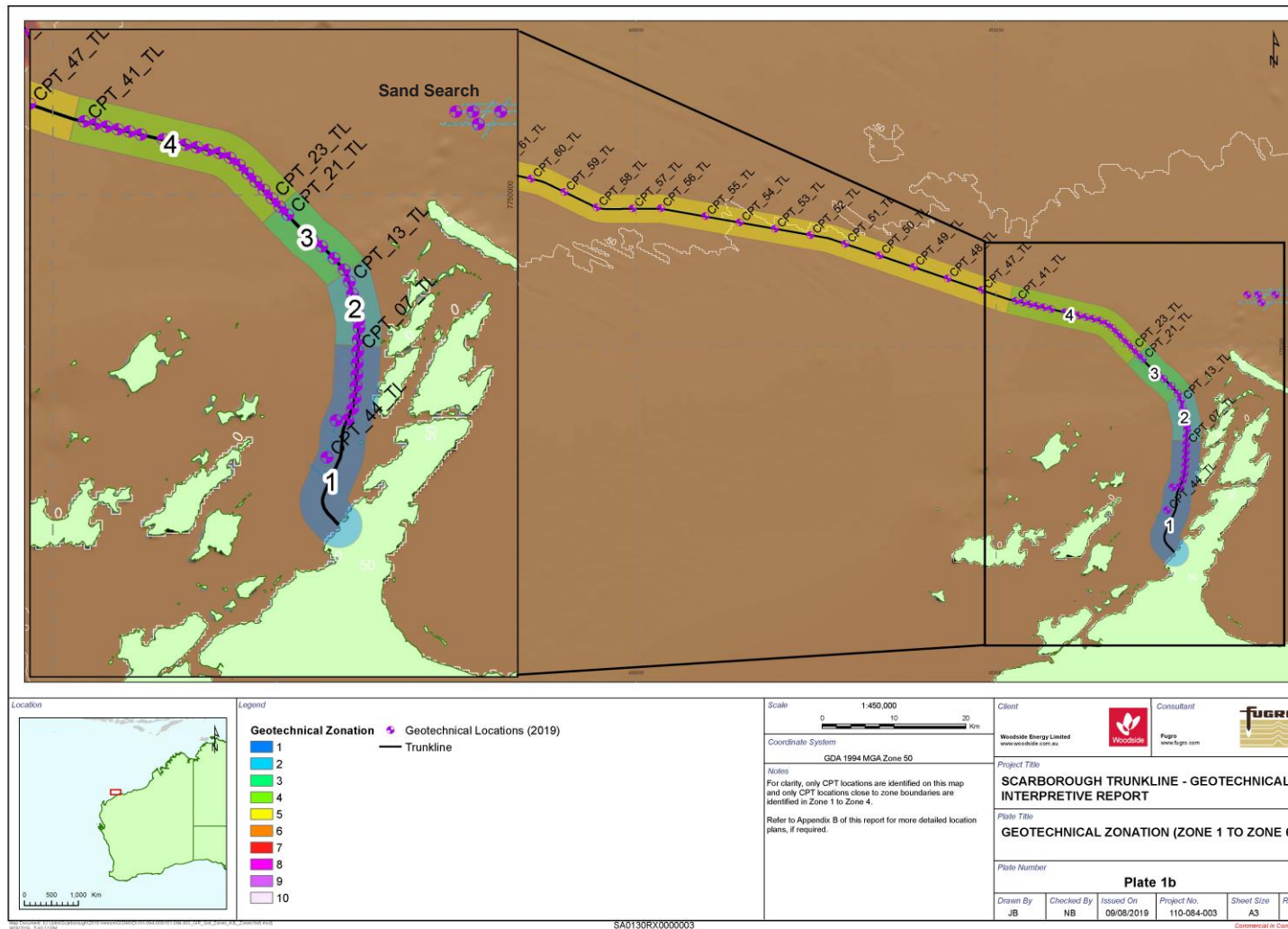
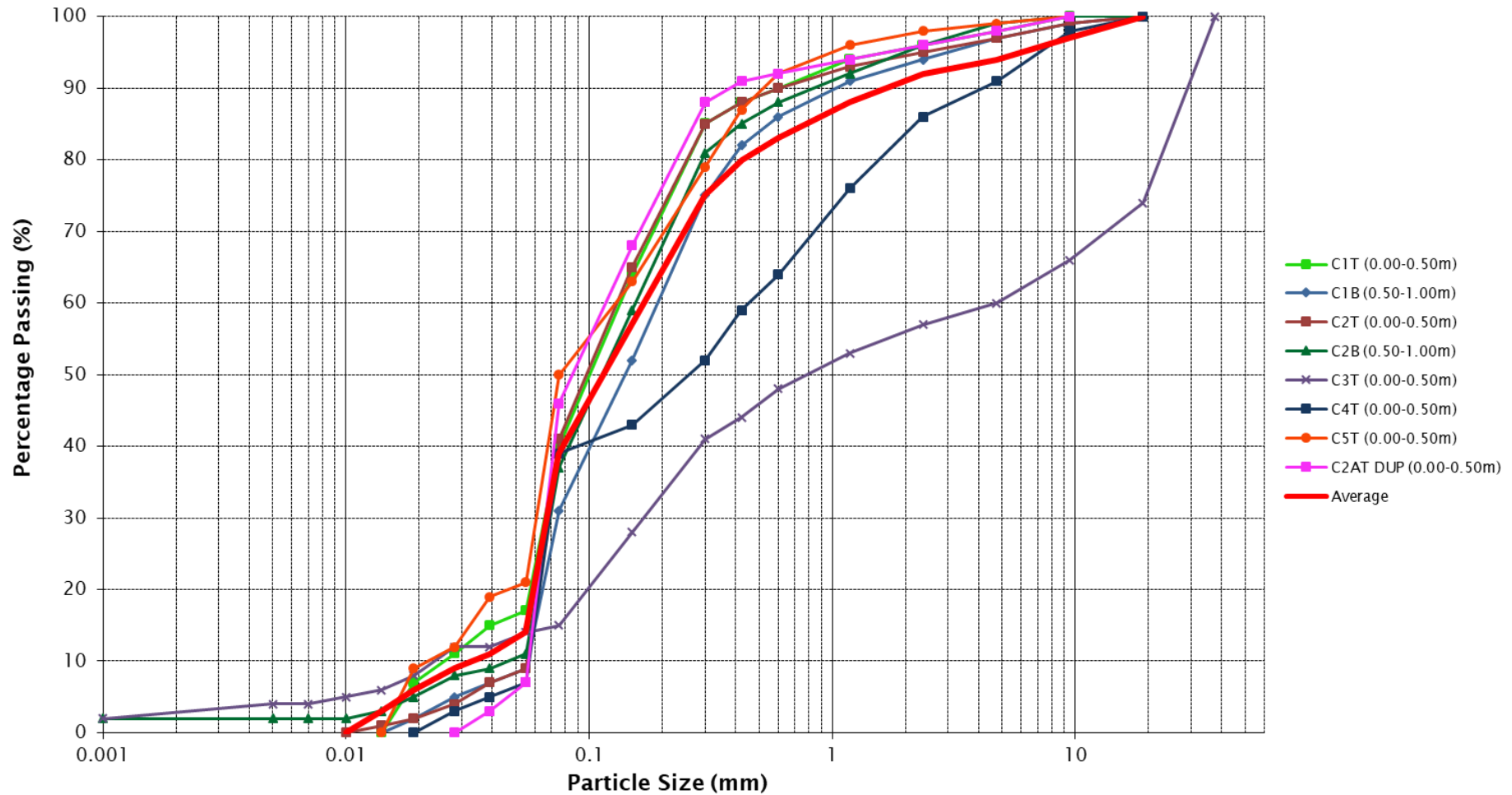


Figure 3.5 Locations of geotechnical sample points along the trunkline and in the sand search area, extracted and modified from Fugro (2019). Note Zone 1 is from KP0-16.5, Zone 2 is from KP16.5-23.0, Zone 3 is from KP23.0-31.0 and Zone 4 is from KP31.0-51.0.



Pipeline Zone PRE3 Seabed Sediments - PSD Data



CLAY	SILT	SAND FRACTION			GRAVEL FRACTION		
		FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE

Figure 3.6 Calculated average PSD (solid red line) overlain on raw PSD data for all samples from pipeline zone PRE3.

**Table 3.16** *In situ* PSDs broken down into DREDGEMAP material classes for each pipeline section to be dredged, derived from available geotechnical information.

Sediment Grain Size Class	Size Range (µm)	Zone PRE1 (%)	Zone PRE2 (%)	Zone PRE3 (%)	Zone PRE4 (%)	Zone PRE6 (%)	Zone PRE8 (%)	Zone PRE9B (%)	Zone PRE10A (%)	Zone PRE10B (%)
Clay	<7	4.58	4.58	0.97	6.80	0.51	7.33	11.00	8.80	2.75
Fine Silt	7-34	8.51	8.51	8.89	7.63	11.52	6.33	9.50	5.40	2.00
Coarse Silt	35-74	18.31	18.31	28.37	11.94	25.94	16.33	21.00	10.80	7.75
Fine Sand	75-130	32.70	32.70	18.04	23.71	32.19	13.67	20.00	20.70	18.00
Coarse Sand	>130	35.90	35.90	43.73	49.92	29.84	56.34	38.50	54.30	69.50

**Table 3.17** *In situ* PSDs broken down into DREDGEMAP material classes for the sand backfill material dredged from borrow ground A for each pipeline section, derived from available geotechnical information.

Sediment Grain Size Class	Size Range (µm)	Zone POST2 (%)	Zone POST4 (%)	Zone POST6 (%)	Zone POST8 (%)	Zone POST9B (%)	Zone POST10A (%)	Zone POST10B (%)
Clay	<7	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Fine Silt	7-34	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Coarse Silt	35-74	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Fine Sand	75-130	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Coarse Sand	>130	94.00	94.00	94.00	94.00	94.00	94.00	94.00

**Table 3.18** *In situ* PSDs broken down into DREDGEMAP material classes for the rock backfill material of each pipeline section, assumed as typical values for well-graded limestone rubble.

Sediment Grain Size Class	Size Range (µm)	Zone POST1 (%)	Zone POST3 (%)	Zone POST5 (%)	Zone POST7 (%)	Zone POST9A (%)
Clay	<7	0.50	0.50	0.50	0.50	0.50
Fine Silt	7-34	0.50	0.50	0.50	0.50	0.50
Coarse Silt	35-74	0.50	0.50	0.50	0.50	0.50
Fine Sand	75-130	0.50	0.50	0.50	0.50	0.50
Coarse Sand	>130	98.00	98.00	98.00	98.00	98.00

**Table 3.19** *In situ* dry bulk densities, based on the ‘high estimate’ values specified in Fugro (2019).

Zone	Dry Bulk Density (t/m <sup>3</sup> )
PRE1	1.54
PRE2	1.54
PRE3	1.54
PRE4	1.54
PRE5	1.54
PRE6	1.54
PRE7	1.54
PRE8	1.54
PRE9A	1.54
PRE9B	1.54
PRE10A	1.54
PRE10B	1.54
Borrow Ground A	1.78

## 3.7 Model Sediment Sources

### 3.7.1 Overview

To accurately represent the pipeline dredging, disposal and backfill operations in DREDGEMAP, a range of information was defined for the proposed operations, including dredge, disposal and backfill methodology, production rates, sediment/rock types and quantities (see Section 3.5). It is evident that there will be seven different sources of suspended sediment plumes during dredging, disposal and backfill operations, which can be broadly defined as:

- Direct suspension of material from the BHD bucket, from grabbing and lifting unconsolidated sediments and sedimentary rock through the water column, accounting for periods of no-dewatering and dewatering from the split hopper barge.
- Disposal of sediment and rock excavated by the BHD from split hopper barges to the nominated spoil grounds.
- Direct suspension of material by the TSHD during dredging of unconsolidated sediments, accounting for no-overflow and overflow periods.
- Disposal of sediment dredged by the TSHD to the nominated spoil grounds.
- Indirect suspension of material due to the propeller-wash of the BHD barge tug and TSHD while dredging.
- Suspension of material during backfill activities, via TSHD, using sediments dredged from the borrow ground.
- Suspension of material during backfill activities, via side-dump vessel, using rock from onshore quarries.

Each of these sources of suspended sediment plumes will vary in strength and persistence depending on the nature of the operations. In the DREDGEMAP model, each source is defined by specifying the time-varying flux rate, PSD and vertical profile in the water column. The following sections outline how the information provided has been used to represent the dredging operations in the model and explain any assumptions that have been made to supplement the available information.

### 3.7.2 Representation of BHD Dredging

A BHD will be used to excavate all unconsolidated sediments and sedimentary rock material from zone PRE1, and all sedimentary rock material from zones PRE2 and PRE4 (following TSHD dredging of unconsolidated

sediments in these zones) (Figure 3.7). The BHD will use a large excavator arm fitted with an open bucket of (nominally) 20-30 m<sup>3</sup> capacity. The excavator will lift material in the bucket and deliver it to one of two waiting split hopper barges – assumed for the purposes of modelling to be 3,800 m<sup>3</sup> in capacity – for transport to spoil ground AB for disposal.

Sources of sediment suspension from this type of operation include:

- Disturbance of the seabed sediments by the excavator bucket.
- Dewatering of the split hopper barge, resulting in the discharge of water and entrained sediments.

Only the first of these sources was considered in this modelling study, as it is understood that dewatering of split hopper barges is not planned to occur during BHD dredging operations for the Scarborough development.

Past observations have shown that material is suspended due to the initial grab at the seabed. Further suspension is generated as sediment spills from the bucket as it is lifted through the water column. Spillage of water and sediment also occurs as the bucket breaks free of the water surface and drains freely. Only sediments <130 µm in diameter are considered “lost” (i.e. suspended into the water column), because the coarser material spilled from the bucket while being lifted to the surface will fall immediately to the bottom where it will be re-dredged during subsequent grabs. As such, the distribution of material suspended by the bucket spillage is assumed to be distributed across the four smaller sediment size classes in the model.

For the dredging of the unconsolidated sediments, the PSD used in the model is based on PSDs from nearby boreholes (see Section 3.6), with the proportion >130 µm removed and the remaining distribution normalised to 100% by scaling up the proportions in the four remaining size classes (Table 3.20). The same PSD is used for the sedimentary rock component, assuming that due to the excavation action of the BHD the rock will break down into similar proportions of fines. Because the dredging action of the excavator involves no cutting or hydraulic pumping, this is a conservative assumption.

Table 3.21 shows the assumed vertical distribution of the suspended material during the BHD operations. The distribution is higher at the seabed and water surface, to represent the larger loss rate of material during the initial grab and as the bucket breaks free of the water column.

**Table 3.20 Assumed PSDs of sediments initially suspended into the water column during BHD dredging operations along the pipeline route.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Sediment and Sedimentary Rock Removal – Zone PRE1	PSD (%) for Sedimentary Rock Removal – Zone PRE2	PSD (%) for Sedimentary Rock Removal – Zone PRE4
Clay	<7	7.15	7.15	13.58
Fine Silt	7-34	13.28	13.28	15.24
Coarse Silt	35-74	28.56	28.56	23.84
Fine Sand	75-130	51.01	51.01	47.34
Coarse Sand	>130	0.00	0.00	0.00

**Table 3.21 Assumed vertical distribution of sediments initially suspended into the water column during BHD dredging operations along the pipeline route.**

Elevation	Example Elevation (m ASB) – 10 m Water Depth	Vertical Distribution (%) of Sediments
Surface/water depth	10.0	23.0
0.80 x water depth	8.0	16.0
0.50 x water depth	5.0	14.0
0.30 x water depth	3.0	19.0
0.10 x water depth	1.0	28.0

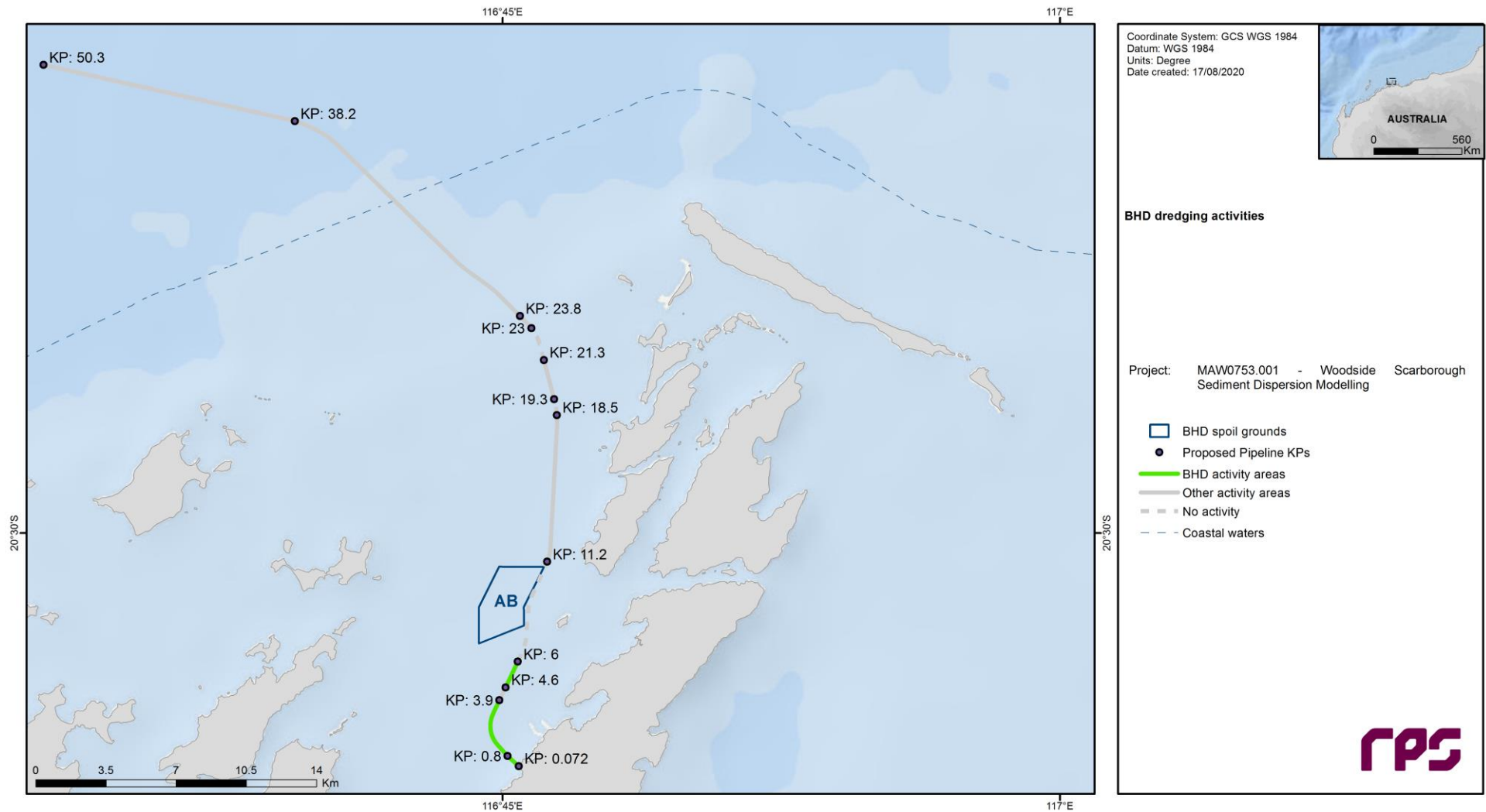


Figure 3.7 Overview of BHD dredging activity areas, showing the pipeline KPs and location of spoil ground AB that will be utilised during disposal activities.

Loss rates from similar operations are known to vary based on such factors as the size and type of bucket (i.e. open or closed), nature of the seabed material, presence of debris, current speed and depth of water, as well as the care of the operator (Hayes & Wu, 2001; Anchor Environmental, 2003). Reported rates compared by Anchor Environmental (2003) varied from 0.1% to 10%, with a mean of 2.1%. In the absence of measurements for the specific situation and equipment, the mean of 2.1% of production rate is assumed for all BHD operations.

### **3.7.3 Representation of Disposal of BHD-Dredged Material**

All material dredged by the BHD will be placed into one of two waiting 3,800 m<sup>3</sup> split hopper barges and transported (by harbour tug) to spoil ground AB for disposal (Figure 3.7). This material will include all unconsolidated sediments and sedimentary rock material from zone PRE1, and all sedimentary rock material from zones PRE2 and PRE4.

For the disposal of the unconsolidated sediments dredged by BHD, the PSD used in the model is based on PSDs from nearby boreholes (see Section 3.6). The same PSD is used for the sedimentary rock component, assuming that due to the excavation action of the BHD the rock will break down into similar proportions of fines. Because the dredging action of the excavator involves no cutting or hydraulic pumping, this is a conservative assumption. This PSD is adjusted by removal of the component treated as suspended during dredging (see Section 3.7.2), but as this represents only 2.1% of the mass for the minor components, the modified PSD is not significantly different to the *in situ* PSD (Table 3.22).

Once at the AB spoil ground, the split hopper barge will open to release the sediments from the bottom of the hull at a depth of approximately 5.8 m below sea level. Previous observations of sediment dumping from hopper vessels (e.g. CSMW, 2005) have shown that there is an initial rapid descent of solids, with the heavy particles tending to entrain lighter particles, followed by a billowing of lighter components back into the water column after contact with the seabed (Figure 3.8). A proportion of the lighter components will also remain suspended and may be trapped by density layers, if present.

Because simulations in this study focused on the far-field fate of sediment particles due to transport and sinking after the initial dump phase, simulations were run with the initial vertical distribution specified to represent the post-collision phase for a case where a high proportion of the sediments are resuspended after collision with the seabed. To represent this, an assumed vertical distribution for the sediments (Table 3.23) has been specified following published information from previous hopper disposal operations (CSMW, 2005; NEPA, 2001). This vertical distribution, with the majority of the material input near the seabed and only 7% of the material released in the upper half of the water column, is in line with values quoted in the recent literature review by Mills & Kemps (2016), which found that sediment resuspension from individual dredged material disposal events was generally less than 10% of the disposed material load.

It is estimated that 95-99% of the bulk load deposits directly onto the seabed in a typical case, with the remainder released into the water column (CSMW, 2005, NEPA, 2001). It is difficult to find other definitive source values in the literature, but a value of 5% of each load agrees well with past experience and appears to be a conservative estimate based on the values quoted above. Accordingly, 5% of each hopper load was placed in suspension in the water column in the sediment fate model.

In addition to the proportion of material immediately suspended in the water column, disposal from the barge will result in the stockpiling of sediment as a mound on the seabed that will be subject to resuspension by tidal and wave forces. Because fine sediments in the deposited mass may be subject to ongoing resuspension and dispersion over time, it was necessary to specify the deposits as a further source of sediment potentially subject to resuspension.

The proportion of the newly deposited trenched material available for resuspension is characterised by a finite limit regulated by PSDs and the occurrence of natural sediment capping. As a result of the selective resuspension of the smaller-sized particles (silts and clays), the deposited mound surface layer gradually contains a greater proportion of larger particle sizes. These larger particles act as armouring against bottom shear stress, protecting and retaining the remaining fine particles in the mound. Therefore, in the model it was assumed that 5% of the deposited mass – representing the volume of the upper surface layer – would be subject to resuspension. It should be noted that the model maintains a mass balance estimate of the remaining sediment of each size class within each grid cell to derive an estimate of the median particle size in the surface-layer sediments. In turn, the potential for ongoing resuspension of fines is calculated. In this way, the model represents the increased armouring of sediments as the average particle size increases.



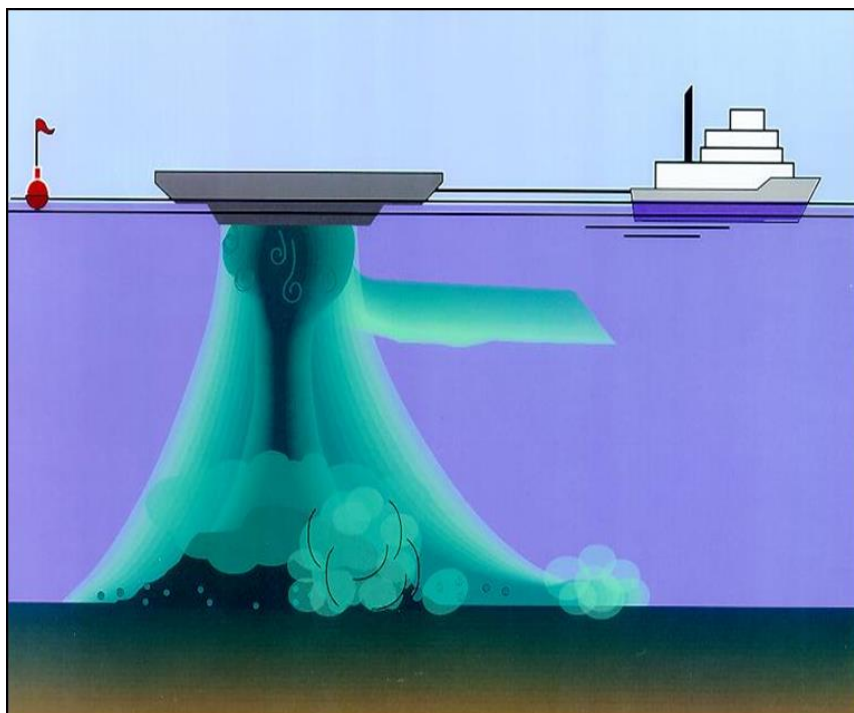
The disposal time for the barge material within each dredge cycle was assumed to be 15 minutes (Table 3.4). The disposal location within spoil ground AB was varied for each dredge cycle in a randomised manner, with the ultimate aim of ensuring an even distribution of dredged material within the spoil ground by the conclusion of all activities.

**Table 3.22 Assumed PSDs of sediments initially suspended into the water column during split hopper barge disposal operations at spoil ground AB.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Sediment and Sedimentary Rock Disposal – Zone PRE1	PSD (%) for Sedimentary Rock Disposal – Zone PRE2	PSD (%) for Sedimentary Rock Disposal – Zone PRE4
Clay	<7	4.43	4.43	6.51
Fine Silt	7-34	8.23	8.23	7.31
Coarse Silt	35-74	17.71	17.71	11.44
Fine Sand	75-130	31.63	31.63	22.72
Coarse Sand	>130	38.00	38.00	52.02

**Table 3.23 Assumed vertical distribution of sediments initially suspended into the water column during split hopper barge disposal operations at spoil ground AB.**

Elevation	Example Elevation (m ASB) – 10 m Water Depth	Vertical Distribution (%) of Sediments
Surface/water depth	10.0	2.0
0.60 x water depth	6.0	5.0
0.40 x water depth	4.0	15.0
0.15 x water depth	1.5	35.0
0.10 x water depth	1.0	43.0



**Figure 3.8 Conceptual diagram showing the general behaviour of sediments dumped from a split hopper barge and the vertical distribution of material set up by entrainment and billowing (source: ASA, 2004).**



### 3.7.4 Representation of TSHD Dredging

A TSHD will be used to excavate all unconsolidated sediments from zones PRE2, PRE3, PRE4, PRE6, PRE8 and PRE9B with disposal at spoil ground 2B, and zones PRE10A and PRE10B with disposal at spoil ground 5A (Figure 3.9). The TSHD will also be used to dredge backfill material from borrow ground A, with disposal along the pipeline route. For the purposes of modelling, the capacity of the TSHD to be used for dredging of the pipeline route and borrow ground A was assumed to be 12,000 m<sup>3</sup>.

TSHD vessels remove sediments by dragging a large drag-head over the seabed and drawing up the disturbed sediment by hydraulic suction. Sources of sediment suspension from this type of operation include:

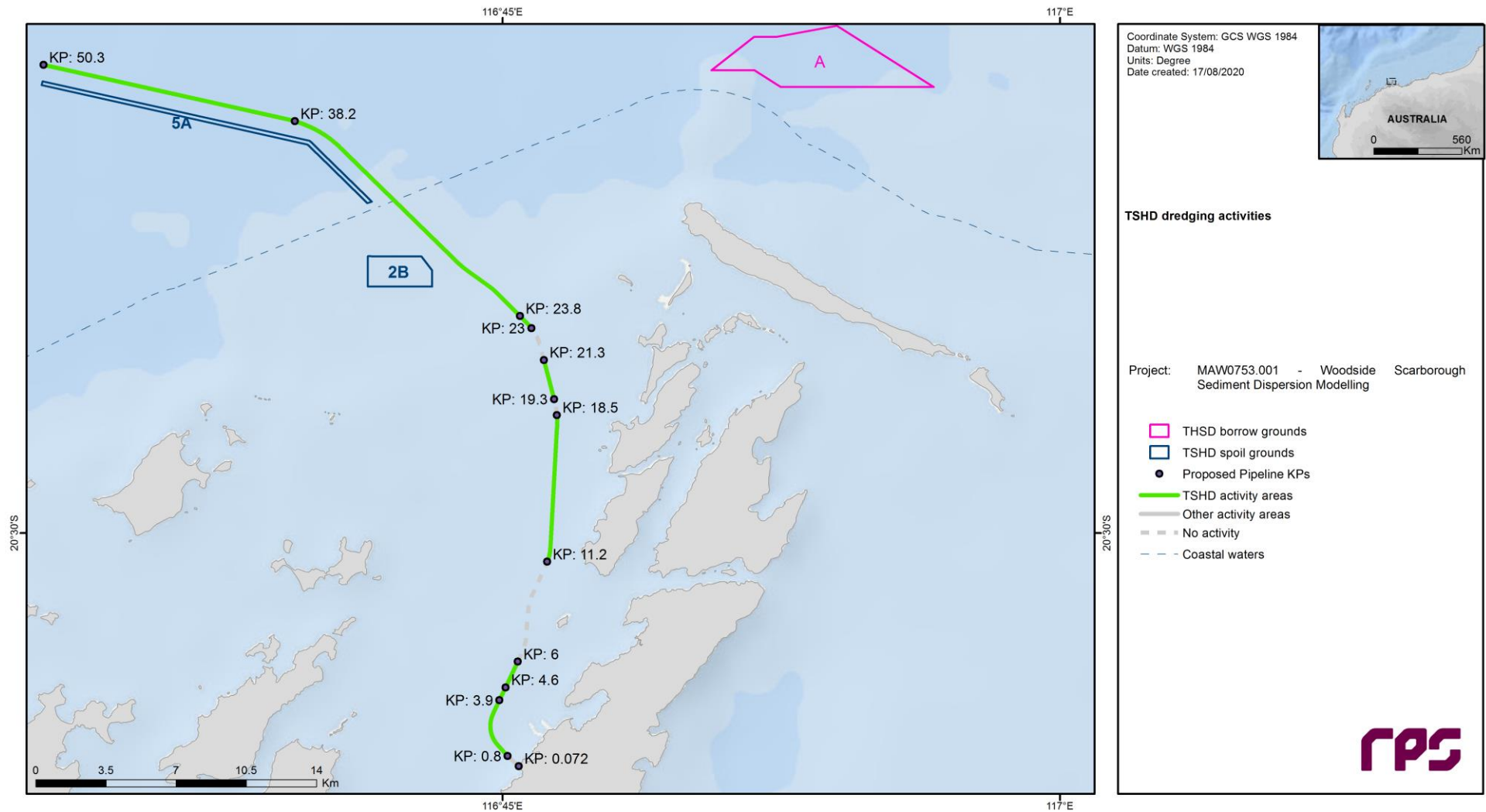
- Hydraulic disturbance of the seabed sediments by the trailing arm.
- Propeller-wash generated as the vessel manoeuvres.
- Overflow of the on-board hoppers, resulting in the discharge of water and entrained sediments.

The characteristics of each of these sources vary greatly due to a wide range of factors (USACE, 2008) making the generalisation of source terms difficult. It appears however, that the overflow source term is dominant, being typically an order of magnitude greater than the drag-head and propeller-wash terms.

For the dredging of the unconsolidated sediments during periods with no overflow, the PSDs used in the model are based on PSDs from nearby boreholes (see Section 3.6). The PSDs applied to dredging along the pipeline route and within the borrow ground are shown in Table 3.24 and Table 3.26, respectively. During overflow periods, an increase in the rate of release of fine sediments, and hence initial turbidity, is observed (Anchor Environmental, 2003). The overflow water contains a high proportion of fines because the coarse material settles rapidly in the hopper while the fine material remains in suspension. After the hopper begins overflowing, PSDs heavily weighted towards finer particles have been assumed based on previous field measurements of hopper barge dewatering at Geraldton Port (OPR, 2010), with the proportion >75 µm removed and the remaining distribution normalised to 100% by scaling up the proportions in the three remaining size classes. The PSDs applied to dredging along the pipeline route and within the borrow ground are shown in Table 3.25 and Table 3.27, respectively.

Table 3.28 shows the assumed vertical distribution of the suspended material during the TSHD operations while the hopper is not overflowing. The distribution is concentrated near the seabed and decreases in intensity towards the surface, to represent the disturbance of seabed material by the drag-head and propeller-wash effects (HR Wallingford, 2003). After the hopper begins overflowing, a uniform distribution of sediments throughout the water column, between the hull depth and the seabed, has been assumed to represent a continuous stream of material being discharged from the hopper through an overflow system incorporating a 'green valve' (Table 3.29). This is consistent with measured ADCP profiles presented by Hitchcock & Bell (2004), which show a reasonably even distribution of sediment through the water column during hopper overflow.

It should be noted that the installation of a green valve within an overflow system is designed to reduce the proportion of air entrained into the overflow mixture, which in turns will result in a lessened phenomenon of discharged material mixing and billowing upwards to the water surface. To account for this process in the modelling, the vertical distribution applied during hopper overflow (Table 3.29) is not uniform throughout the entire water column, but only from the hull depth to the seabed.



**Figure 3.9 Overview of TSHD dredging activity areas, showing the pipeline KPs, locations of spoil grounds 2B and 5A that will be utilised during disposal activities, and location of borrow ground A where sand backfill material is to be sourced.**

**Table 3.24 Assumed PSDs of sediments initially suspended into the water column during TSHD dredging operations along the pipeline route while the hopper is not overflowing.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Sediment Removal							
		Zone PRE2	Zone PRE3	Zone PRE4	Zone PRE6	Zone PRE8	Zone PRE9B	Zone PRE10A	Zone PRE10B
Clay	<7	4.58	0.97	6.80	0.51	7.33	11.00	8.80	2.75
Fine Silt	7-34	8.51	8.89	7.63	11.52	6.33	9.50	5.40	2.00
Coarse Silt	35-74	18.31	28.37	11.94	25.94	16.33	21.00	10.80	7.75
Fine Sand	75-130	32.70	18.04	23.71	32.19	13.67	20.00	20.70	18.00
Coarse Sand	>130	35.90	43.73	49.92	29.84	56.34	38.50	54.30	69.50

**Table 3.25 Assumed PSDs of sediments initially suspended into the water column during TSHD dredging operations along the pipeline route while the hopper is overflowing.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Sediment Removal							
		Zone PRE2	Zone PRE3	Zone PRE4	Zone PRE6	Zone PRE8	Zone PRE9B	Zone PRE10A	Zone PRE10B
Clay	<7	42.31	34.94	47.30	34.63	45.84	43.18	50.05	50.88
Fine Silt	7-34	27.03	25.57	27.51	28.27	25.23	25.30	25.65	25.63
Coarse Silt	35-74	30.66	39.49	25.19	37.11	28.93	31.53	24.30	23.50
Fine Sand	75-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coarse Sand	>130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Table 3.26 Assumed PSDs of sediments initially suspended into the water column during TSHD dredging operations at borrow ground A while the hopper is not overflowing.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Sediment Removal – Borrow Ground A							
Clay	<7	1.13							
Fine Silt	7-34	1.13							
Coarse Silt	35-74	1.13							
Fine Sand	75-130	3.00							
Coarse Sand	>130	94.00							

**Table 3.27 Assumed PSDs of sediments initially suspended into the water column during TSHD dredging operations at borrow ground A while the hopper is overflowing.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Sediment Removal – Borrow Ground A							
Clay	<7	54.48							
Fine Silt	7-34	27.32							
Coarse Silt	35-74	18.59							
Fine Sand	75-130	0.0							
Coarse Sand	>130	0.0							

**Table 3.28 Assumed vertical distribution of sediments initially suspended into the water column during TSHD dredging operations along the pipeline route and at borrow ground A while the hopper is not overflowing.**

Elevation	Example Elevation (m ASB) – 30 m Water Depth	Vertical Distribution (%) of Sediments
10.0 m (ASB)	10.0	5.0
7.0 m (ASB)	7.0	15.0
3.0 m (ASB)	3.0	20.0
2.0 m (ASB)	2.0	40.0
1.0 m (ASB)	1.0	20.0

**Table 3.29 Assumed vertical distribution of sediments initially suspended into the water column during TSHD dredging operations along the pipeline route and at borrow ground A while the hopper is overflowing.**

Elevation	Example Elevation (m ASB) – 30 m Water Depth and 10 m Hull Depth	Vertical Distribution (%) of Sediments
Hopper hull elevation	20.0	20.0
0.75 x hull elevation	15.0	20.0
0.50 x hull elevation	10.0	20.0
0.25 x hull elevation	5.0	20.0
0.50 m (ASB)	0.5	20.0

The resuspension of sediment when the TSHD hopper is not overflowing was estimated by combining the drag-head and propeller-wash terms. The propeller-wash component typically dominates the drag-head component, but both sources were assessed. Propeller-wash generation was estimated by applying a model of the bed-induced shear stress from the TSHD vessel over the range of under-keel clearances expected during the dredging operations.

Field measurements of drag-head-induced sediment suspension was reported by Coastline Surveys Ltd (CSL, 1999). The inferred production rate was less than 1 kg/s and it was concluded that, generally, drag-head production is small in comparison to the quantity of sediment released via overflow. Given the above, a loss rate of 0.6% of the gross production rate, representing a combined sediment flux due to losses from the drag-head and propeller-wash, was assumed when the TSHD is not overflowing. This rate is within the range of values (less than 1%) summarised in a review of contemporary practice conducted as part of the WAMSI Dredging Science Node by Kemps & Masini (2017).

The resuspension of sediment from hopper overflow is the most complex source term associated with a TSHD. The discharged water-sediment mixture forms a negatively-buoyant jet (dynamic plume) that descends towards the seabed. Due to mixing and entrainment as the plume descends, not all of the sediment in the dynamic plume directly descends to the seabed, forming a passive plume in the water column below the TSHD. Based on evidence from numerous field measurements, Spearman *et al.* (2011) state that the dynamic plume retains the bulk of the overflow sediment, with a small proportion (in the range of 5-15%) contained in the passive plume. The proportion of sediment contained in the passive plume is a function of the air content in the overflow mixture, with the use of a green valve shown to significantly reduce the proportion of the overflow sediment that forms the passive plume (Spearman *et al.*, 2011).

The overflow source term was calculated for each discrete dredge zone based on a method outlined in Becker *et al.* (2015) and recommended in Kemps & Masini (2017). This method was applied as it allows the proportion of fines in the material being dredged in each zone to be considered in determination of the source terms. This is important for this project given the significant variations in the fines proportion between dredge zones. Additionally, this method allows for the use of a green valve in the overflow system to be accounted for in the source term estimates.

The Becker *et al.* (2015) method considers the following parameters:

- The total flux of fines entering the hopper during dredging.

- The proportion of the dredged fines flux that settles (and is trapped) in the hopper.
- The proportion of the dredged fines flux that exits the hopper in the overflow water.
- The relative proportions of the overflow fines flux that contribute to the dynamic and passive plumes.

In calculating these parameters, the method takes into account:

- The PSDs and dry bulk densities of the material to be dredged.
- The production/pumping rates of the TSHD.
- The rate at which material settles/traps in the hopper.
- The overflow-to-loading ratio based on the dredge cycle times.

Becker *et al.* (2015) state that a reasonable estimate of the proportion of overflow fines that becomes the passive plume will fall in the range of 0-20%. This broadly agrees with the range of 5-15% found in Spearman *et al.* (2011). Values of this order of magnitude are confirmed by field measurements taken during operation of a sand dredger (8,225 m<sup>3</sup> capacity) in Hong Kong, which suggested 15% of the overflow fines flux contributed to the passive plume (Whiteside *et al.*, 1995).

It should be noted that in the Hong Kong study a green valve was not employed to moderate the overflow. There is limited experimental data available on the degree to which a green valve will reduce the proportion of the overflow fines flux that becomes a passive plume. DHI (2010) state that an appropriate estimate for the proportion of fines remaining in the passive plume when a green valve is in use is around 7% of the total overflow fines flux, with this assessment informed by monitoring activities undertaken in the vicinity of marine construction vessels in Singapore.

The proposed use of a green valve during the Scarborough development is accounted for in this modelling study by assuming that 10% of the overflow fines flux will become a passive plume. This represents a moderate value in the context of the ranges stated above. Calculation of the overflow source rates using a proportional value of 10% are presented in Table 3.30 for each dredge zone, expressed as a proportion of the dredging production rate.

**Table 3.30 Calculated source rates of sediments initially suspended into the water column during TSHD hopper overflow, using the methodology outlined in Becker *et al.* (2015).**

Zone	Source Rate (% Production Rate)
PRE1	2.77
PRE2	2.77
PRE3	3.96
PRE4	2.73
PRE6	3.74
PRE8	3.21
PRE9B	4.44
PRE10A	2.17
PRE10B	1.08
Borrow Ground A	0.30

The overflow source rate values calculated using the Becker *et al.* (2015) method range from 0.30% to 3.96% of the gross production rate, which compares well with the range of published measurements from TSHD operations (0.1-5.0%; Hayes & Wu, 2001) and is within the range of values used in modelling studies (0.3-9.8%) outlined in a review of contemporary practice by Kemps & Masini (2017). The lower overflow source rate values (<1.5% of total production) were calculated for the dredge areas containing material that had lower fines content, such as borrow ground A and zone PRE10B (see Section 3.6). Overflow source rate values quoted in literature for areas with low fines content range from 0.3 to 2.1% of total production, giving confidence in the calculated values. For the trenching areas where the fines content is higher (zones PRE1 through PRE9; Section 3.6), the calculated overflow source rate values are in the mid-range of the literature values.



To further contextualise the overflow source rate values calculated using the Becker *et al.* (2015) method, the corresponding TSS concentrations in the hopper overflow have been calculated and compared to values found in literature. Passive plume concentrations calculated without accounting for a green valve are in the range 2,300-4,700 mg/L for the areas with lower fines content (borrow ground A and zone PRE10), and in the range 9,000-14,000 mg/L for the remaining trenching areas. When a green valve is considered, the calculated concentrations are reduced to 1,900-3,800 mg/L for the areas with lower fines content and 7,500-11,500 mg/L for the remaining areas.

Field measurements taken of the TSS concentrations within overflowing waters are typically in the 5,000-6,000 mg/L range, and are generally less than 10,000 mg/L adjacent to the hopper (Hitchcock & Bell, 2004). These values correlate well with data drawn from other Western Australian projects that cannot be cited here for reasons of confidentiality. From comparisons, it is clear that the calculated values above fall into a range that past experience suggests is realistic.

### **3.7.5 Representation of Disposal of TSHD-Dredged Material**

All material dredged by the TSHD along the pipeline route will be transported to spoil ground 2B or 5A (as appropriate) for disposal (Figure 3.9). This material will include all unconsolidated sediments from zones PRE2, PRE3, PRE4, PRE6, PRE8, PRE9B, PRE10A and PRE10B.

For the disposal of the unconsolidated sediments dredged by TSHD, the PSDs used in the model are based on PSDs from nearby boreholes (see Section 3.6). These PSDs are adjusted by removal of the component treated as suspended during dredging along the pipeline route (see Section 3.7.4), but as this represents only between 0.6% and 5.0% (averaged value depending on the relative contributions of overflow and non-overflow periods to the overall mass flux) of the mass for the minor components, the modified PSDs are not significantly different to the *in situ* PSDs (Table 3.31).

Once at the appropriate spoil ground, the hopper will open to release the sediments from the bottom of the hull at a depth of approximately 12.75 m below sea level. Previous observations of sediment dumping from hopper vessels (e.g. CSMW, 2005) have shown that there is an initial rapid descent of solids, with the heavy particles tending to entrain lighter particles, followed by a billowing of lighter components back into the water column after contact with the seabed (Figure 3.10). A proportion of the lighter components will also remain suspended and may be trapped by density layers, if present.

Because simulations in this study focused on the far-field fate of sediment particles due to transport and sinking after the initial dump phase, simulations were run with the initial vertical distribution specified to represent the post-collision phase for a case where a high proportion of the sediments are resuspended after collision with the seabed. To represent this, an assumed vertical distribution for the sediments (Table 3.32) has been specified following published information from previous hopper disposal operations (CSMW, 2005; NEPA, 2001). This vertical distribution, with the majority of the material input near the seabed and only 15% of the material released at hull depth or above, is in line with values quoted in the recent literature review by Mills & Kemps (2016), which found that sediment resuspension from individual dredged material disposal events was generally less than 10% of the disposed material load.

It is estimated that 95-99% of the bulk load deposits directly onto the seabed in a typical case, with the remainder released into the water column (CSMW, 2005, NEPA, 2001). It is difficult to find other definitive source values in the literature, but a value of 5% of each load agrees well with past experience and appears to be a conservative estimate based on the values quoted above. Accordingly, 5% of each hopper load was placed in suspension in the water column in the sediment fate model.

In addition to the proportion of material immediately suspended in the water column, disposal from the hopper will result in the stockpiling of sediment as a mound on the seabed that will be subject to resuspension by tidal and wave forces. Because fine sediments in the deposited mass may be subject to ongoing resuspension and dispersion over time, it was necessary to specify the deposits as a further source of sediment potentially subject to resuspension.

The proportion of the newly deposited trenched material available for resuspension is characterised by a finite limit regulated by PSDs and the occurrence of natural sediment capping. As a result of the selective resuspension of the smaller-sized particles (silts and clays), the deposited mound surface layer gradually contains a greater proportion of larger particle sizes. These larger particles act as armouring against bottom shear stress, protecting and retaining the remaining fine particles in the mound. Therefore, in the model it was assumed that 5% of the deposited mass – representing the volume of the upper surface layer – would be subject to resuspension. It should be noted that the model maintains a mass balance estimate of the remaining

sediment of each size class within each grid cell to derive an estimate of the median particle size in the surface-layer sediments. In turn, the potential for ongoing resuspension of fines is calculated. In this way, the model represents the increased armouring of sediments as the average particle size increases.

The disposal time for the hopper material within each dredge cycle was assumed to be 15 minutes (Table 3.5). The disposal location within the relevant spoil ground was varied for each dredge cycle in a randomised manner, with the ultimate aim of ensuring an even distribution of dredged material within each spoil ground by the conclusion of all activities (Table 3.6).

**Table 3.31 Assumed PSDs of sediments initially suspended into the water column during TSHD hopper disposal operations at spoil grounds AB, 2B and 5A.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Sediment Disposal							
		Zone PRE2	Zone PRE3	Zone PRE4	Zone PRE6	Zone PRE8	Zone PRE9B	Zone PRE10A	Zone PRE10B
Clay	<7	3.15	0.00	5.22	0.00	5.58	8.82	7.42	1.89
Fine Silt	7-34	7.60	7.10	6.71	9.30	5.37	8.22	4.69	1.57
Coarse Silt	35-74	17.28	26.57	11.10	24.33	15.23	19.41	10.13	7.35
Fine Sand	75-130	32.70	18.04	23.71	32.19	13.67	20.00	20.70	18.00
Coarse Sand	>130	39.27	48.29	53.25	34.18	60.15	43.54	57.07	71.18

**Table 3.32 Assumed vertical distribution of sediments initially suspended into the water column during TSHD hopper disposal operations at spoil grounds AB, 2B and 5A.**

Elevation	Example Elevation (m ASB) – 20 m Water Depth and 12.75 m Hull Depth	Vertical Distribution (%) of Sediments
Surface/water depth	20.0	5.0
Hopper hull elevation	7.5	10.0
0.75 x hull elevation	5.6	20.0
0.50 x hull elevation	3.8	30.0
0.25 x hull elevation	1.9	35.0

### 3.7.6 Representation of BHD Barge Tug/TSHD Propeller-Wash

Modelling of sediment suspended by propeller-induced motion at the seabed was conducted to estimate likely sediment concentrations generated by the TSHD and harbour tug propellers while manoeuvring during dredging operations. A specialised numerical model developed by RPS, named PROPMAP, was used to estimate a time- and space-varying rate of sediment flux from the seabed due to the thrust imposed by each vessel’s propellers at the seabed level behind the moving vessel. The model uses characteristics of the vessel of interest to estimate the three-dimensional thrust-field generated by the propellers. This thrust-field is then combined with the grain size and degree of cohesion of the seabed sediments, and the varying under-keel clearance along the typical vessel paths, to calculate variations in the suspended sediment flux from the seabed in time and space.

The following details were used as input to PROPMAP to calculate variable rates of sediment flux from the seabed due to propeller-wash effects:

- Vessel tracks and speeds.
- Vessel draft, engine power and propeller size.
- Bathymetry along the vessel tracks.
- Grain size distributions of the sediment, defining the proportions of clay and silt along the vessel tracks.

The calculation steps applied by PROPMAP at discrete intervals along each vessel path were as follows:



- Based on the vessel's engine power and propeller size, determine the propeller-induced velocity profile.
- Based on the vessel's draft and the local bathymetry, determine the intersection of the thrust-field with the seabed and find the thrust imposed on it.
- Based on the velocity of water flow at the seabed, calculate the shear stress acting on it.
- Based on the calculated shear stress, and the sediment grain size and cohesiveness, calculate a theoretical erosion flux (mass per unit time) for seabed sediment.

Propeller-induced velocity profiles were calculated using empirical expressions from Blaauw & van de Kaa (1978). Thrust at the seabed will depend upon the level of the bed, which will intersect as a plane (Figure 3.10). For an under-keel clearance of 1 m, a velocity field exceeding 5 m/s would intersect the bed in this example, while at a clearance of 4 m the bed velocity would be reduced to <2 m/s. The influence of this thrust will vary with the sediment grain size. Consequently, outcomes will be sensitive to the magnitude of the thrust, the under-keel clearance and the PSD of the bed.

Sediment erosion flux was estimated from the derived velocity field using the empirical formulations of van Rijn (1989). The sediment flux component attributable to propeller-wash was found to be depth-limited for areas where the under-keel clearance was less than 3 m, assuming a fully-loaded vessel (maximum draft). Simulations over deeper areas, including the areas where vessels would transit to the spoil grounds, indicated that flux would be minimal (compared to other sources) and representative of short-lived suspension of the surface-layer sediments followed by rapid settlement. This settlement time was estimated to be shorter than the simulation output time step. Propeller-wash was found to be more significant in the shallow areas and would be greater over sediments previously suspended by dredging.

These findings were used to inform the definition of the sediment flux rates during TSHD dredging operations (see Section 3.7.4).

In summary, propeller-wash effects were considered: (i) along each pipeline section during dredging; and (ii) between each pipeline section and the spoil grounds during dredging. During backfilling, the typical depths at borrow ground A and the waters between it and the pipeline mean propeller-wash effects are less relevant and therefore were not considered.

In the absence of definitive information relating to the seabed composition of the areas traversed by the barge tug or TSHD between the pipeline and the spoil grounds, for simplicity the seabed composition was assumed to be described by the PSD of the area from which the vessel began its journey.

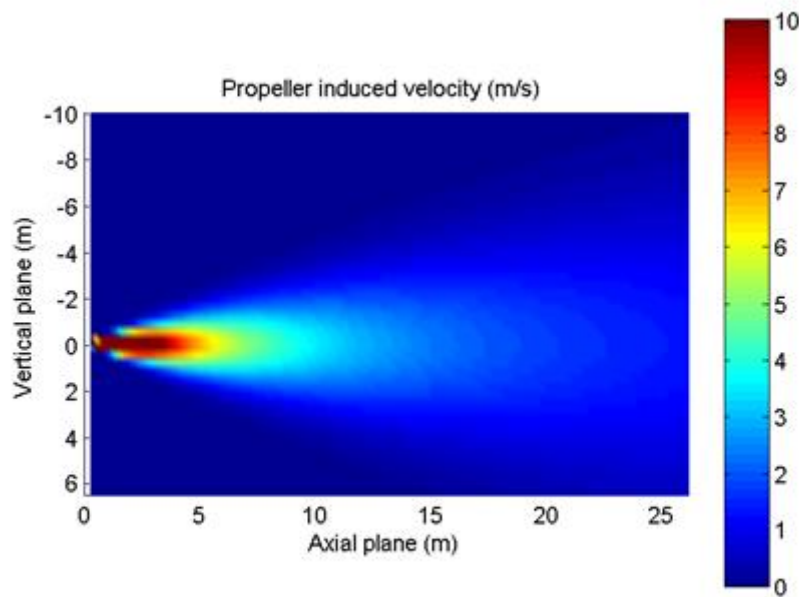


Figure 3.10 Two-dimensional view of a propeller-induced velocity profile.

### 3.7.7 Representation of TSHD Backfill

All material dredged by the TSHD within borrow ground A will be transported to sections POST2, POST4, POST6, POST8, POST9B, POST10A and POST10B of the pipeline route for placement (Figure 3.3).

For the backfill of the pipeline using unconsolidated sediments dredged by TSHD, the PSD used in the model is based on PSDs from nearby boreholes (see Section 3.6). This PSD is adjusted by removal of the component treated as suspended during dredging within the borrow ground (see Section 3.7.4), but as this represents only between 0.6% and 0.9% (averaged value depending on the relative contributions of overflow and non-overflow periods to the overall mass flux) of the mass for the minor components, the modified PSDs are not significantly different to the *in situ* PSDs (Table 3.33). It has been assumed, conservatively, that all sediment dredged from the borrow ground is available for use as backfill material.

Once at the appropriate location, the TSHD suction pipe will discharge material at a minimum elevation of 3 m above the pipeline (Figure 3.12). This gap will vary, and for modelling purposes the elevation above the pipeline has been assumed to be a constant 5 m. Sediment release from the suction pipe will occur as a jet of slurry that will have an initial rapid descent of solids followed by a billowing of lighter components back into the water column after contact with the seabed/pipeline (Swanson *et al.*, 2004). The plume that results from disposal of a jet of slurry from a pipe is typically concentrated near the seabed, with most of the material within 3 m of the bottom, and lower concentrations extend up towards the surface (Figure 3.11). Table 3.34 shows the assumed vertical distribution of the suspended material for the TSHD backfill source.

It is estimated that 95-99% of the bulk load deposits directly onto the seabed in a typical case, with the remainder released into the water column (CSMW, 2005, NEPA, 2001). It is difficult to find other definitive source values in the literature, and no site-specific sampling has been conducted for TSHD backfill placement operations, but a value of 5% of each load agrees well with past experience and appears to be a conservative estimate based on the values quoted above. Accordingly, 5% of each hopper load was placed in suspension in the water column in the sediment fate model.

The placement time for the hopper material within each dredge cycle was assumed to be 107 minutes (Table 3.7).

**Table 3.33 Assumed PSD of sediments initially suspended into the water column during TSHD backfill operations using material dredged at borrow ground A.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Sediment Backfill – Borrow Ground A
Clay	<7	0.64
Fine Silt	7-34	0.88
Coarse Silt	35-74	0.96
Fine Sand	75-130	3.00
Coarse Sand	>130	94.90

**Table 3.34 Assumed vertical distribution of sediments initially suspended into the water column during TSHD backfill operations using material dredged at borrow ground A.**

Elevation	Example Elevation (m ASB) – 20 m Water Depth and 5 m Pipe Elevation	Vertical Distribution (%) of Sediments
Surface/water depth	20.0	5.0
Suction pipe elevation	5.0	10.0
0.75 x pipe elevation	3.8	15.0
0.50 x pipe elevation	2.5	20.0
0.25 x pipe elevation	1.3	50.0

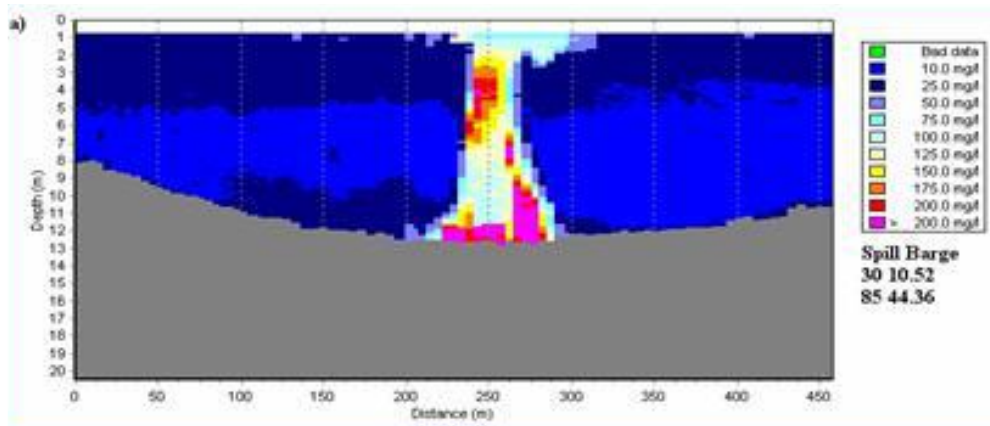


Figure 3.11 Example of a vertical cross-section through a typical open-water discharge plume from a spreader barge pipe (source: Swanson *et al.*, 2004).

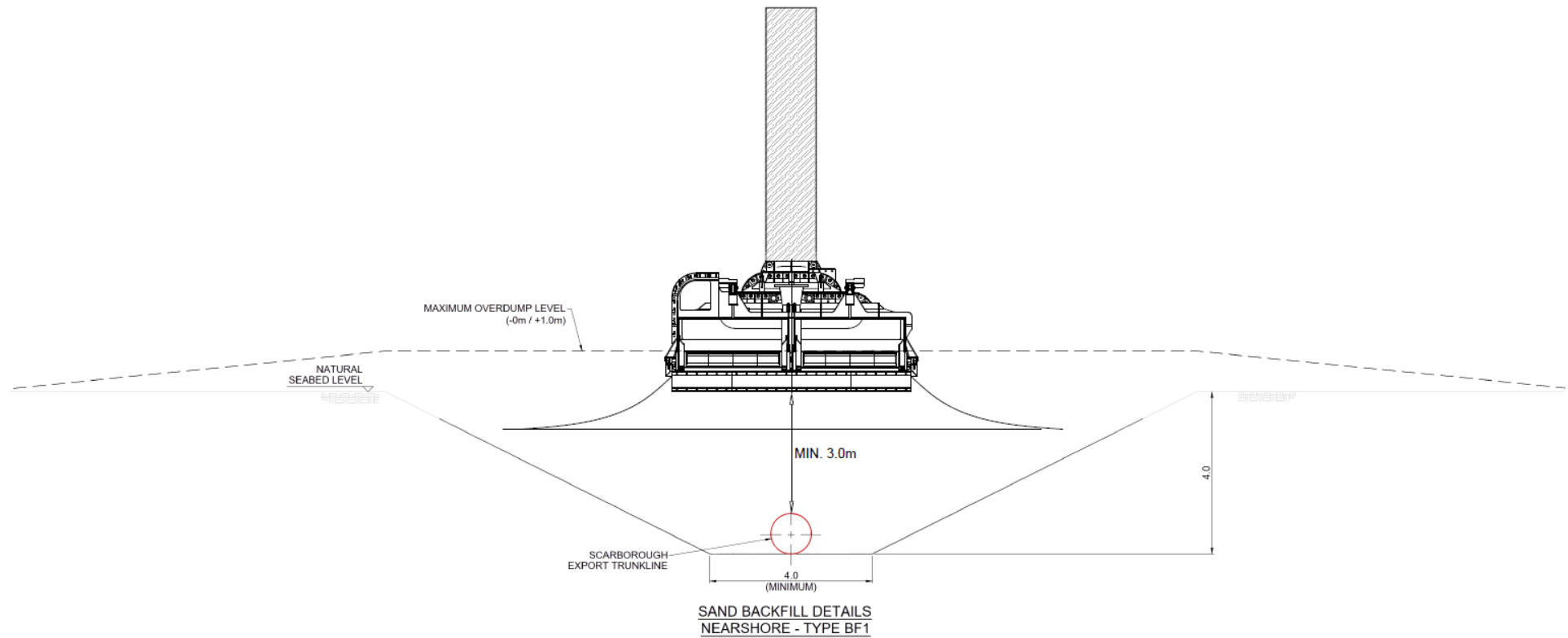


Figure 3.12: Schematic diagram showing how the TSHD draghead will be used to discharge sand backfill material along the pipeline (source: Boskalis, 2020).

### 3.7.8 Representation of Side-Dump Vessel Backfill

Rock material from an onshore quarry source will be transported by a side-dump vessel to sections POST1, POST3, POST5, POST7 and POST9A of the pipeline route for placement (Figure 3.3).

Based on previous project experience, quarry rock used for breakwater core construction or pipeline armouring typically contains around 5% material with diameters less than 100 mm. Therefore, a conservative loss rate of 5% of the total volume of dumped rock material was applied in the modelling. Based on material testing at the quarry from previous projects, the volume of quarried core/rock material less than 130 µm in size is typically even lower, in the order of 2%. Table 3.35 (equivalent to Table 3.18) presents the PSD that was applied in the modelling of the rock backfill source. The composition of the material is dominated by coarse sand and larger particles, with the 2% of finer material assumed to be evenly spread over the four smaller material classes. Although coarse sand material will be initially suspended in the water column, it will not be available for resuspension once it settles.

Because the rock backfill material will be dumped from the deck of the vessel, it will move through the whole water column as it falls to the seabed. Therefore, a uniform vertical distribution of suspended material in the water column has been assumed (Table 3.36).

The placement time for the rock material within each cycle was assumed to be 120 minutes. Other than an increased placement time, the operational cycle is assumed to be equivalent to that for TSHD backfill operations outlined in Table 3.7.

**Table 3.35 Assumed PSDs of sediments initially suspended into the water column during side-dump vessel backfill operations using material from an onshore quarry.**

Sediment Grain Size Class	Size Range (µm)	PSD (%) for Rock Backfill
Clay	<7	0.5
Fine Silt	7-34	0.5
Coarse Silt	35-74	0.5
Fine Sand	75-130	0.5
Coarse Sand	>130	98.0

**Table 3.36 Assumed vertical distribution of sediments initially suspended into the water column during side-dump vessel backfill operations using material from an onshore quarry.**

Elevation	Example Elevation (m ASB) – 10 m Water Depth	Vertical Distribution (%) of Sediments
Surface/water depth	10.0	20.0
0.8 x water depth	8.0	20.0
0.6 x water depth	6.0	20.0
0.4 x water depth	4.0	20.0
0.2 x water depth	2.0	20.0

### 3.7.9 Summary of Source Rates

For each source of suspended sediment plumes during dredging, disposal and backfill operations, as described in the preceding sections, Table 3.37 and Table 3.38 summarises the associated loss rates and approximate volumes of suspended sediment expected. The volumes assigned to the respective non-overflow and overflow periods for TSHD dredging, and non-dewatering period for BHD dredging, are based on the modelled cycle times detailed in Table 3.4, Table 3.5 and Table 3.7.

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A total of approximately 259,085 m<sup>3</sup> of sediment is expected to be initially suspended in the water column over the course of the modelled program. This volume represents approximately 6.6% of the in situ dredged (and quarry) volume. If all deposited material assumed to be available for potential resuspension following spoil ground disposal operations is actually resuspended, a total of 349,951 m<sup>3</sup> of sediment will be suspended in the water column over the program duration; this will represent approximately 8.9% of the in situ dredged (and quarry) volume.

**Table 3.37 Summary of sediment sources applied in the model.**

Phase	Operation	Source Rate (% Production Rate)	Dredged Volume (m <sup>3</sup> )	Suspended Volume (m <sup>3</sup> )
Pipeline dredging	BHD excavator bucket	2.10	60,860	1,278
	BHD excavator bucket + dewatering from barge	N/A		
	Disposal from hopper barge	5 (water column) 5 (seabed; <i>potential</i> )		
	TSHD drag-head + propeller-wash	0.60	1,805,999	48,256
	TSHD drag-head + propeller-wash + overflow	Specified per zone (see Table 3.38)		
	Disposal from TSHD	5 (water column) 5 (seabed; <i>potential</i> )		
Pipeline backfilling	TSHD drag-head + propeller-wash	0.60	1,979,341	16,896
	TSHD drag-head + propeller-wash + overflow	Specified for borrow ground A (see Table 3.38)		
	Placement from TSHD	5.00	73,326	3,666
	Placement from side-dump vessel	5.00		
<b>Totals</b>			<b>3,919,526</b>	<b>259,085 349,951</b>

**Table 3.38 Sediment source rates applied in the model for the TSHD while overflowing.**

Zone	Source Rate (% Production Rate)
PRE1	3.37
PRE2	3.37
PRE3	4.56
PRE4	3.33
PRE6	4.34
PRE8	3.81
PRE9B	5.04
PRE10A	2.77
PRE10B	1.68
Borrow Ground A	0.90

## 4 ENVIRONMENTAL THRESHOLD ANALYSIS

### 4.1 Overview

Predictions of SSC for each scenario were assessed against a series of water quality thresholds to categorise the modelled outcomes into management zones of influence and impact, defined with regard to environmental sensitivities in the study region. These thresholds, and the technical justification which followed guidance from the WAMSI Dredging Science Node, were supplied to RPS by Advisian (MScience, 2019). Thresholds were selected for benthic habitats on the basis of past and present mapping of communities in the project area.

Thresholds for three management zones – a Zone of Influence (ZoI), a Zone of Moderate Impact (ZoMI) and a Zone of High Impact (ZoHI) – were defined. The criteria associated with each management zone also varied across three ecological zones, which were broadly defined based on past studies of these areas (MScience, 2019). The ecological zones are named as follows, with reference to the pipeline chainages shown in Figure 1.1, and with the spatial extents agreed for this study shown in Figure 4.1:

- Offshore: the pipeline area beyond KP25, and generally all areas north of a boundary line containing Rosemary Island, Legendre Island and Delambre Island.
- Zone B: the pipeline area between KP8 and KP25, adjacent coral and macroalgae habitats within Mermaid Sound, and generally all coral, macroalgae and mixed community habitats between Dolphin Island and Bezout Island.
- Zone A: the pipeline area between the shoreline and KP8, adjacent macroalgae and mangrove habitats within Mermaid Sound, and generally all mangrove, marsh and seagrass habitats between Nickol Bay and Point Samson.

Thresholds for coral habitats within Zone B were developed with the aid of data collected during a previous dredging campaign at Barrow Island, which is considered a similar habitat. Water quality within Zone A is more turbid, and coral communities are comprised of more sediment-tolerant or resilient species. Offshore habitats are not likely to contain corals.

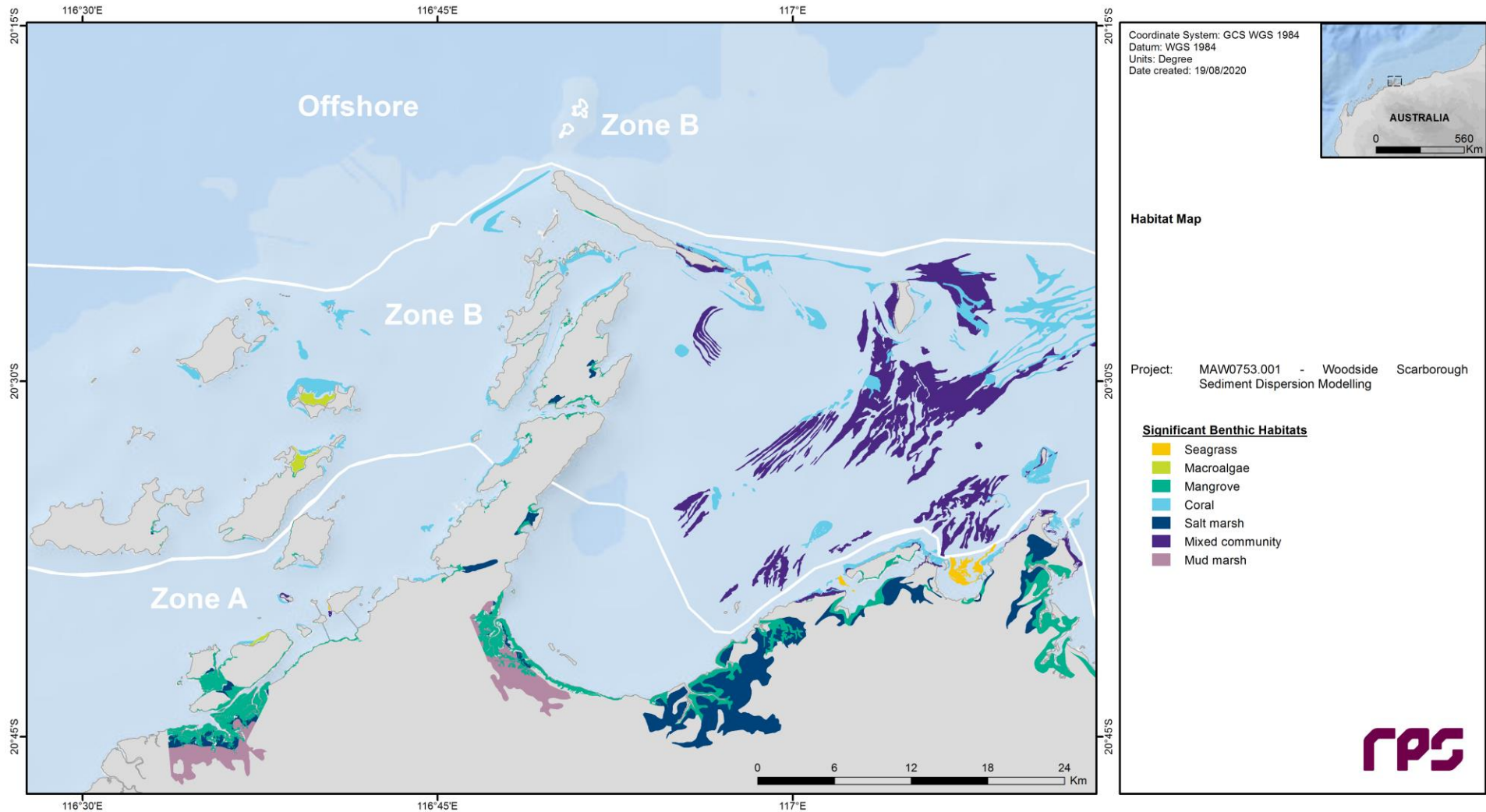
In developing the thresholds, it was assumed that benthic communities around Spoil Ground 2B and Borrow Ground A (see Figure 1.1) will be sparse and made up largely of sponges and filter feeders without corals.

### 4.2 Baseline Water Quality

Water quality data collected during the LNG Foundation Project over the period of 2007 to 2010 (MScience, 2010) demonstrated that turbidity at sites within the Zone A and Zone B management areas was raised by 0.7 NTU and 0.3 NTU, respectively, as a result of dredging activities. Subtraction of these dredge-induced values across the 2007-2010 data set yielded a set of baseline turbidity measurements.

Table 4.1 presents the mean and 80<sup>th</sup>-percentile SSC values calculated from the background turbidity measurements in each zone. For the purposes of threshold assessment, it has been assumed that the summer season comprises the period of November to March and the winter season contains the months of April to October.





**Figure 4.1** Delineation of the proposed ecological zones (Zone A, Zone B and Offshore) in the context of known habitat areas and types. Thresholds used to define the management zones will vary in magnitude between the ecological zones.

**Table 4.1 Baseline mean and 80<sup>th</sup> percentile SSC values calculated from measurements undertaken during the LNG Foundation Project (2007-2010), categorised into summer and winter seasons for each of the three ecological zones.**

Ecological Zone	Season	Mean SSC (mg/L)	80 <sup>th</sup> Percentile SSC (mg/L)
A	Summer	4.1	5.0
	Winter	1.8	2.3
B	Summer	2.5	2.7
	Winter	1.2	1.6
Offshore	Summer	1.8	1.8
	Winter	0.6	0.9

### 4.3 Zone of Influence (Zol)

The Zol is defined as “a zone where impacts to water quality will be detectable but below a level causing detectable impacts to biota” (MScience, 2019). This is generally considered equivalent to the area around dredging activities where a plume may be visible to the naked eye.

The Zol threshold will be exceeded at any point within the model domain where dredging is forecast to increase the depth-averaged concentration of SSC (specifically the contribution attributable to dredging activities) by a level greater than the seasonal 80<sup>th</sup> percentile baseline SSC over a 24-hour average period.

Table 4.2 presents the threshold SSC values used to define the extents of the Zol. A background SSC value appropriate for each ecological zone and month of the year was added to the dredge-induced SSC predictions from the sediment fate model prior to evaluation of the thresholds.

Potential exceedances of the threshold were evaluated over the duration of each dredge scenario by:

- Creating a three-dimensional time series of dredge-excess SSC values in each model grid cell (with each scenario spanning a period of more than ten months, the data sets comprised more than 7,500 time steps).
- Adding appropriate background SSC values to each cell.
- Calculating a rolling 24-hour average of the total (dredge plus background) SSC values in each cell, with this time-window progressing through the data set at hourly increments (the temporal resolution of the data set).
- Calculating the 95<sup>th</sup> percentile value of each cell.
- Assessing the 95<sup>th</sup> percentile data against the threshold SSC values.

Typically, averaging discrete data points over an arbitrary time period will serve to reduce the influence of transient spikes in concentration, thereby reducing the possibility of spurious exceedances. More rarely, a transient concentration spike of sufficient magnitude to skew the rolling average to an above-threshold state may result in exceedances being recorded for a longer period than will be the case in reality. Generally, applying a time-average to a data set for the purposes of threshold analysis will result in a smaller zone of effect than if instantaneous data is evaluated. This methodology also has a strong connection to critical exposure times for benthic habitats or species of concern in the project area.

**Table 4.2 Background, dredge-excess and threshold SSC values used as the criteria to define the ZoI outer boundary within each ecological zone.**

Ecological Zone	Season	Time-Averaged Period (hours)	Background SSC (mg/L) <sup>a</sup>	Dredge-Excess SSC (mg/L) <sup>b</sup>	Threshold SSC (mg/L) <sup>c</sup>
A	Summer	24	4.1	5.0	9.1
	Winter	24	1.8	2.3	4.1
B	Summer	24	2.5	2.7	5.2
	Winter	24	1.2	1.6	2.8
Offshore	Summer	24	1.8	1.8	3.6
	Winter	24	0.6	0.9	1.5

<sup>a</sup> Background values are equivalent to 'Mean SSC' values in Table 4.1.

<sup>b</sup> Dredge-excess values are equivalent to '80<sup>th</sup> Percentile SSC' values in Table 4.1.

<sup>c</sup> Threshold values are the sum of background and dredge-excess values.

## 4.4 Zone of Moderate Impact (ZoMI)

The ZoMI is defined as “a zone where impacts are sub-lethal or lethal but recoverable (in terms of the community) within a five-year period” (MScience, 2019).

The ZoMI threshold will be exceeded at any point within the model domain where dredging is forecast to increase the depth-averaged concentration of SSC to a level sufficient to trigger impacts to EC<sub>10</sub> (10% Effect Concentration or 10% Inhibition) or to cause bleaching through loss of light or sedimentation.

Thresholds chosen to indicate a transition between the ZoI and ZoMI areas are largely based on the 'possible mortality' thresholds of Fisher *et al.* (2019). These thresholds are based on analysis of water quality and coral mortality data collected during a previous dredging project at Barrow Island, where coral communities exist in clear, near-oceanic conditions. Distinctions must be made between the thresholds most appropriate for each ecological zone.

Within the offshore zone, only thresholds of relevance to sponges and filter feeders are appropriate because corals, seagrasses and macroalgae are not known to form significant communities. A threshold relating to an LC<sub>10</sub> (10% Lethal Concentration) effect on filter feeder-sponge habitats over a 28-day exposure period was selected (Pineda *et al.*, 2017).

For Zone B, coral communities experience similar conditions to those monitored at Barrow Island and the moderate-impact thresholds of Fisher *et al.* (2019) for coral/mixed benthos communities were deemed to be appropriate (MScience, 2019).

For Zone A, coral communities experience more turbid conditions and are more tolerant of elevated SSC levels and lowered light levels than their neighbours in Zone B due to adaptation and a different mix of species. To account for this greater tolerance, the moderate-impact thresholds in Zone A were defined as those of Zone B multiplied by a factor of 1.5, which is believed to be a conservative multiplier (MScience, 2019). Within both Zones A and B, spongers and filter feeders will occur among the corals, and the mixed community is best evaluated using coral-focused thresholds.

The taxa-specific thresholds and appropriate time-averaging periods (related to exposure times from experimental data) used to define the extents of the ZoMI are detailed in Table 4.3. A background SSC value appropriate for each ecological zone and month of the year was added to the dredge-induced SSC predictions from the sediment fate model prior to evaluation of the thresholds.

Potential exceedances of the thresholds were evaluated over the duration of each dredge scenario by calculating rolling 3-day, 7-day, 10-day, 14-day and 28-day averages (as appropriate in each ecological zone) of SSC values in each model grid cell and checking for breaches as this time-window progressed through the data set at hourly increments (the temporal resolution of the data set). If any time-average SSC value exceeds the corresponding threshold value at any time, even if only on one occasion, the model grid cell is included in the appropriate ZoMI area.

**Table 4.3** Threshold SSC values used as the criteria to define the ZoMI outer boundary within each ecological zone.

Ecological Zone	Time-Averaged Period (days)	Threshold SSC (mg/L)
A	3	29.1
	7	22.5
	10	19.6
	14	17.6
B	3	19.4
	7	14.7
	10	13.1
	14	11.7
Offshore	28	22.5

## 4.5 Zone of High Impact (ZoHI)

Thresholds chosen to indicate a transition between the ZoMI and ZoHI areas are largely based on the 'probable mortality' thresholds of Fisher *et al.* (2019).

Within the offshore zone, a threshold relating to an LC<sub>50</sub> (50% Lethal Concentration) effect on filter feeder-sponge habitats over a 28-day exposure period was selected (Pineda *et al.*, 2017).

For Zone B, the high-impact thresholds of Fisher *et al.* (2019) for coral/mixed benthos communities were deemed to be appropriate (MScience, 2019).

For Zone A, the high-impact thresholds were defined as those of Zone B multiplied by a factor of 1.5, which is believed to be a conservative multiplier (MScience, 2019).

The taxa-specific thresholds and appropriate time-averaging periods (related to exposure times from experimental data) used to define the extents of the ZoHI are detailed in Table 4.4. A background SSC value appropriate for each ecological zone and month of the year was added to the dredge-induced SSC predictions from the sediment fate model prior to evaluation of the thresholds.

Potential exceedances of the thresholds were evaluated over the duration of each dredge scenario by calculating rolling 3-day, 7-day, 10-day, 14-day and 28-day averages (as appropriate in each ecological zone) of SSC values in each model grid cell and checking for breaches as this time-window progressed through the data set at hourly increments (the temporal resolution of the data set). If any time-average SSC value exceeds the corresponding threshold value at any time, even if only on one occasion, the model grid cell is included in the appropriate ZoHI area.

**Table 4.4** Threshold SSC values used as the criteria to define the ZoHI outer boundary within each ecological zone.

Ecological Zone	Time-Averaged Period (days)	Threshold SSC (mg/L)
A	3	53.6
	7	36.8
	10	31.4
	14	27.0
B	3	35.7
	7	24.5
	10	20.9
	14	18.0
Offshore	28	47.0

## 5 RESULTS OF SEDIMENT FATE MODELLING

### 5.1 Spatial Distributions of SSC

#### 5.1.1 Summary

Simulations indicated that there may be significant spatial patchiness in the distribution of SSC at any point in time during the dredging, disposal and backfill operations because of variability in the number of sediment suspension sources, variability in the flux from each of these sources, and the varying dynamics of the transport, settlement and resuspension processes affecting the sediments.

The most pronounced differences in the predicted concentrations at any point in time are found in the vertical distributions, with a distinct increase in concentration towards the seabed. Most material will initially be suspended low in the water column, and material suspended higher in the water column will sink as it moves away from the source. Frequent resuspension of material will also mostly affect the lower reaches. Thus, the spatial area affected above a given concentration is typically greater in the near-seabed layer than in the near-surface layer. It should be noted, however, that there are instances throughout the simulations where elevated concentrations will occur in the near-surface layers – during TSHD overflow operations or during strong resuspension events affecting sediments that have migrated to shallow areas – but these will typically not be sustained for extended periods of time.

Although many of the activities related to dredging and backfilling of the pipeline will take place within Mermaid Sound, which is dominated by tidal currents year-round and is relatively sheltered from the variations in large-scale circulation observed beyond approximately KP30, reasonably distinct seasonal trends are evident in the modelling outcomes of each scenario.

The results observed on any given day will not always be representative of the given season's prevailing transport patterns, and plume concentrations and distributions are forecast to vary markedly. To explore this variability, statistical distributions for each scenario are examined. Percentile distributions will summarise the outcomes over the entire scenario and do not represent an instantaneous plume footprint at any point in time.

Forecasts of median depth-averaged SSC values (values exceeded 50% of the time) do not exceed 0.1 mg/L in either scenario. At the 95<sup>th</sup> percentile, forecasts of depth-averaged SSC values 5 mg/L or greater are found in nearshore areas between Intercourse Island and King Bay for project works commencing in summer (Scenario 2; Figure 5.4), and also near Angel Island and Conzinc Island for project works commencing in winter (Scenario 1; Figure 5.2).

When examined over the course of an entire scenario, the sediment distributions reveal areas that broadly straddle the dredging and disposal zones where recurrent elevations of near-seabed SSC are expected as a consequence of dredging operations. The forecast in each scenario is that the greatest concentrations will typically be found in the inshore waters of Mermaid Sound along the pipeline between the KP5 and KP25 points. This zone contains a significant volume of the overall in situ volume to be dredged, and there are many shallow locales where strong tidal flows both inhibit settlement of fine suspended sediments and stimulate significant levels of resuspension of sediments deposited after initial release in the water column. Dredging of backfill material from the offshore borrow ground causes an additional plume signature north of Legendre Island, with recurrent elevations of near-seabed SSC and subsequent resuspension of this material as it is transported towards Nickol Bay by tidal movements.

Concentrations of suspended sediment in the key activity areas will represent the combined influence of new discharges and resuspension of fine sediments from earlier discharges. Temporal variations in intensity of the dredging operations, including overlap of multiple operations in time or downtime periods, will also influence turbidity peaks and troughs. At progressively more distant areas, the importance of resuspension as a contributor to the distribution of SSC values in general, and near-seabed concentrations in particular, becomes a greater factor. The areas forecast to receive elevated concentrations are substantially larger than would be affected by plumes only from the initial sources. The plume extents tend to expand over periods of several weeks in the direction of net drift, indicating the progressive transport of fine sediments through continuous patterns of settlement and resuspension.

With the duration of each scenario (more than ten months) spanning almost the entire range of seasonal conditions, the direction of net drift will shift from summertime trends (generally longshore in a north-easterly direction) to wintertime trends (generally longshore in a south-westerly direction), or vice versa, depending on commencement times (winter for Scenario 1 and summer for Scenario 2). A progressive shift in the available



source of resuspendable fine sediments is also indicated. Periodic high wave-energy events will be a major contributor to estimates of high SSC in the near-seabed layer, particularly in shallow exposed areas. While these processes are forecast to extend the influence of dredging activities over a wider area, the longshore dispersal of finer sediments is indicated to be an important mechanism for limiting the trapping and build-up of fine sediments in the local region around the key activity areas. The build-up of resuspendable fine sediments in areas remote from dredging activities indicates that the supply of fines to these areas will be greater than their removal due to ongoing resuspension and longshore transport, for as long as sediment input from dredging activities continues.

### **5.1.2 Pipeline Dredging Activities**

For pipeline dredging activities during winter conditions (Scenario 1), sediment plumes at low concentrations are forecast to drift generally towards the south-west. The plumes tend to follow the bathymetric contours between East Intercourse Island and East Lewis Island, and also between West Lewis Island and Rosemary Island.

In contrast, the net drift direction forecast for sediment plumes from pipeline dredging activities during summer conditions (Scenario 2) is towards the north-east, with the plumes following the bathymetric contours as they turn around Legendre Island towards Delambre Island. This drift is imposed by the prevailing south-westerly winds over the summer season. In general, the majority of the dispersing suspended material is forecast to migrate offshore rather than through Flying Foam Passage and Searipple Passage, which is attributable to the local bathymetric features. Much of the dredging occurs in water depths greater than that found within each passage, but strong tidal currents will drive significant sediment concentrations in and out of the passages on a regular basis.

Sections A.1 (Figures A.1 to A.5) and A.2 (Figures A.12 to A.16) in Appendix A contain, for Scenarios 1 and 2 respectively, sequential images of instantaneous SSC values at monthly intervals from pipeline dredging commencement until residual suspended sediments have settled throughout the model domain (prior to commencement of pipeline backfill activities). In both scenarios, the patterns of initial sediment plume generation and longer-term plume migration from inshore-to-offshore dredging and disposal operations are evident. These figures capture transient plumes in areas that may not be represented in the percentile figures in Section 5.1.4, such as the elevated levels of SSC in the vicinity of spoil ground 2B (Figures A.2 and A.13) and to the north of West Lewis Island (Figure A.14).

### **5.1.3 Pipeline Backfill Activities**

The bulk of the sediment suspended by dredging is forecast to remain in Commonwealth waters and be dispersed in the offshore area between the borrow ground and Legendre Island in both scenarios. It should be noted that sediment plumes in this area are more dilute than those expected in Mermaid Sound due to the effects of depth-averaging over greater water depths in offshore areas.

The migration patterns of sediment plumes entering State waters are controlled by seasonal conditions. Strong tidal flows between Hauy Island and Delambre Island will aid movement of sediment towards the shallow waters of Nickol Bay, with this effect being greater during summer (Scenario 1, following pipeline dredging activities in winter) due to predominant net drift towards the east imposed by prevailing south-westerly winds. In contrast, the net drift direction forecast during winter conditions (Scenario 2) is towards the south-west, mostly following the bathymetric contours to the north of Rosemary Island. The sediment plume from operations in this area is forecast to migrate to the offshore pipeline and spoil ground areas, most noticeably in Scenario 2 when borrow ground dredging occurs in winter (following pipeline dredging activities in summer) but at lower concentrations than will have already occurred during pipeline dredging activities.

Sections A.1 (Figures A.6 to A.11) and A.2 (Figures A.17 to A.22) in Appendix A contain, for Scenarios 1 and 2 respectively, sequential images of instantaneous SSC values at monthly intervals from pipeline backfill commencement until residual suspended sediments have settled throughout the model domain. In both scenarios, the generation and migration patterns of sediment plumes from borrow-ground dredging operations are evident, with near-negligible plume contributions from placement of backfill material along the pipeline route.

## 5.1.4 Spatial Outcomes

### 5.1.4.1 Scenario 1: Dredging Operations Commencing during Winter, with Backfill Material Sourced from Borrow Ground A



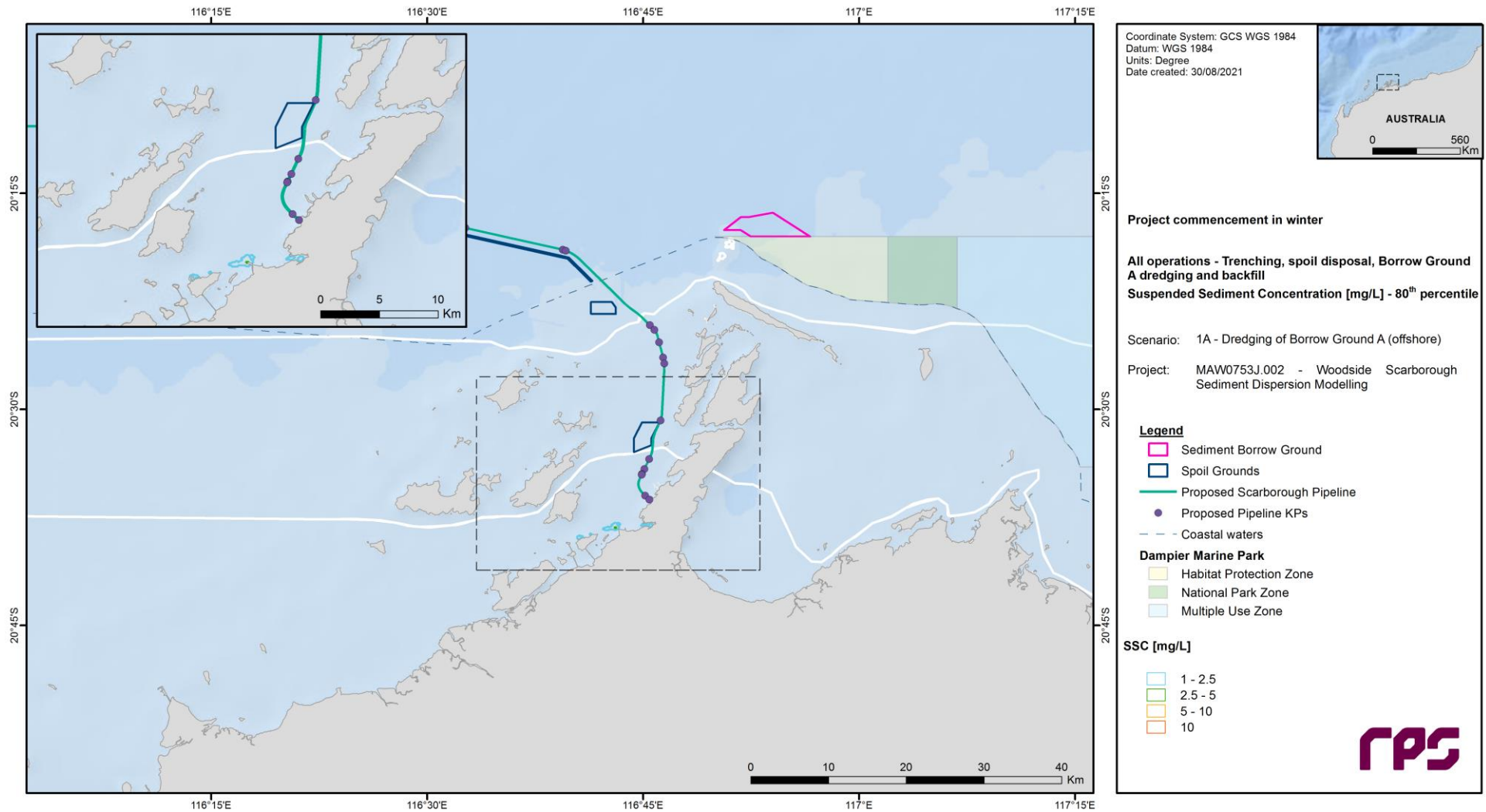


Figure 5.1 Predicted 80<sup>th</sup> percentile dredge-excess SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).

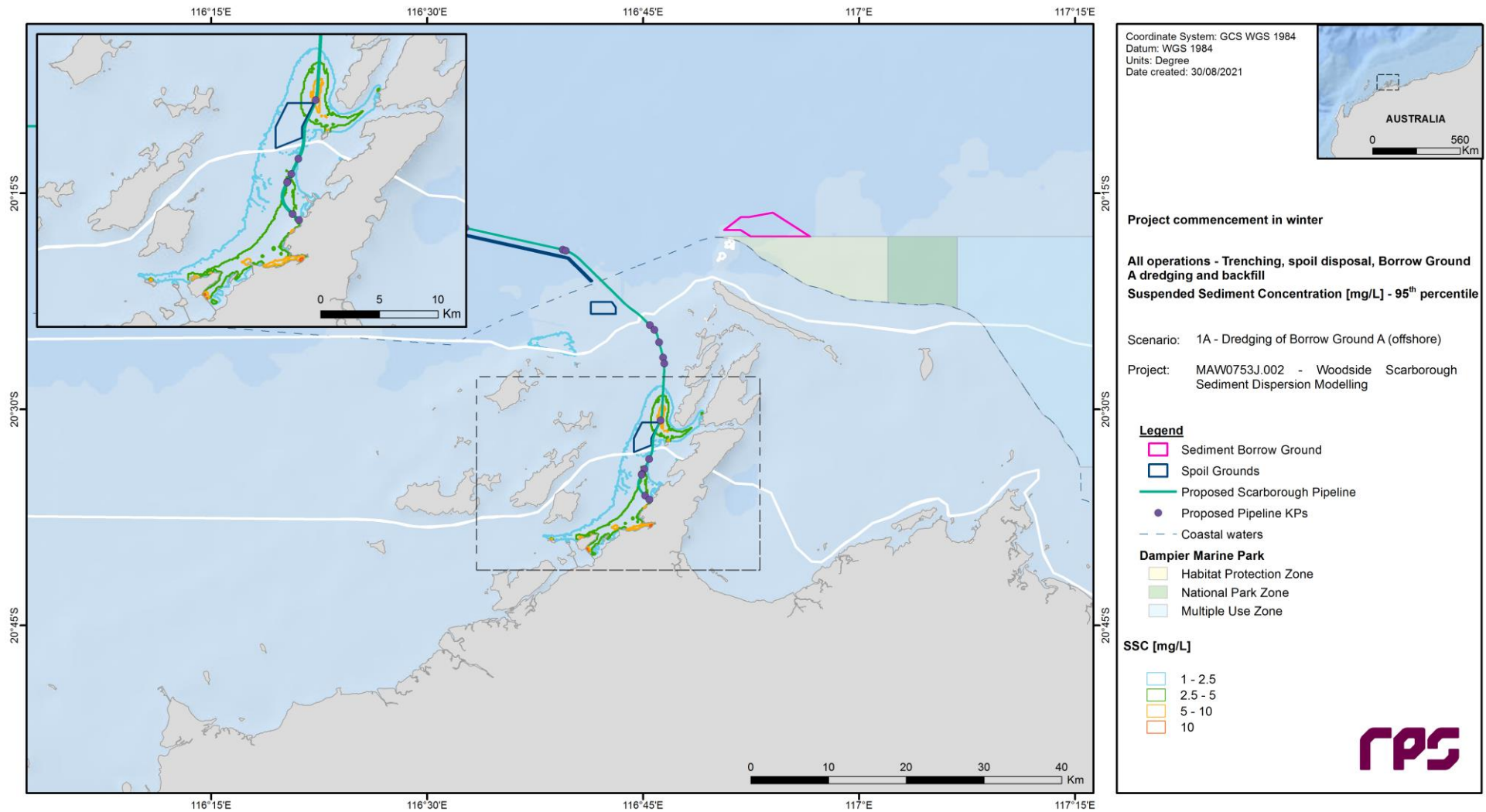


Figure 5.2 Predicted 95<sup>th</sup> percentile dredge-excess SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).

#### 5.1.4.2 Scenario 2: Dredging Operations Commencing during Summer, with Backfill Material Sourced from Borrow Ground A

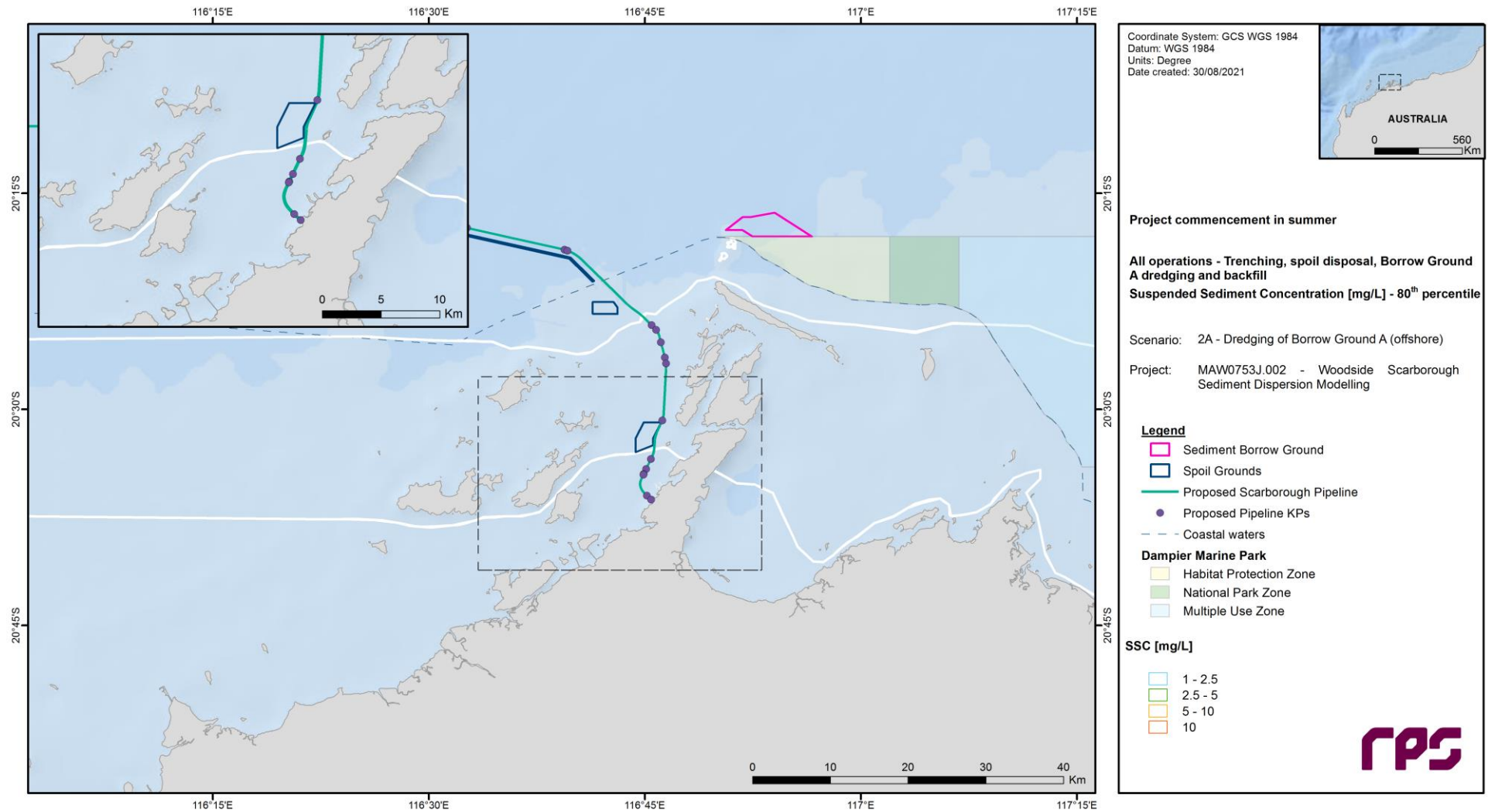


Figure 5.3 Predicted 80<sup>th</sup> percentile dredge-excess SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).

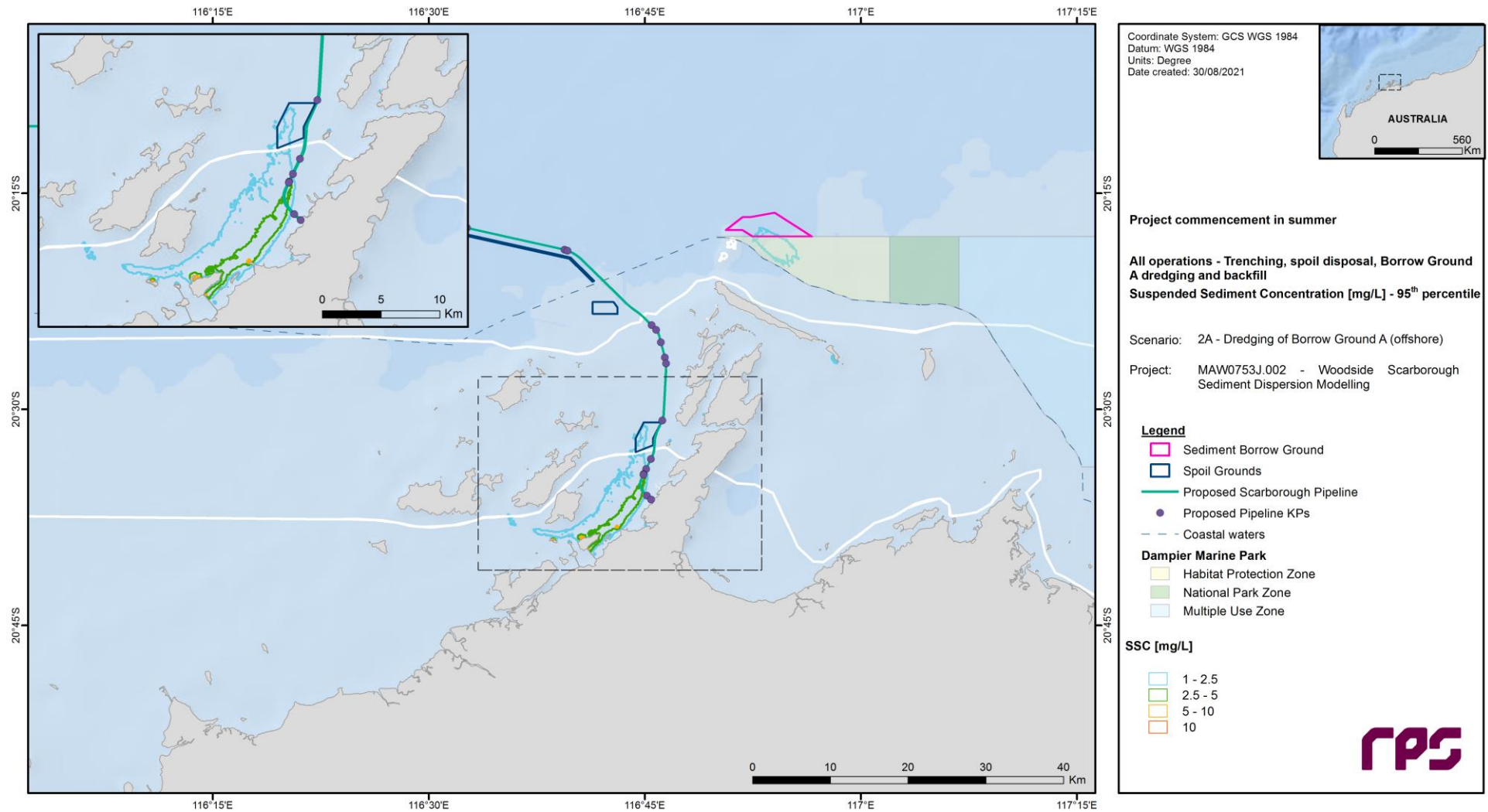


Figure 5.4 Predicted 95<sup>th</sup> percentile dredge-excess SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).



## 5.2 Predictions of Management Zone Extents

### 5.2.1 Summary

Figures showing the calculated extents of the defined management zones – ZoI, ZoMI and ZoHI – over the entire program of dredging, disposal and backfill operations are listed in Table 5.1 for each scenario.

Presentation of the ZoI areas is done on the basis of 95<sup>th</sup> percentile threshold exceedances for the 24-hour rolling average data.

It should be noted that the indicated management zone extents in each case represent a cumulative measure of exceedances of the relevant thresholds over a more than ten-month period, following the threshold criteria described in Section 4. They do not represent an instantaneous plume footprint at any point in time.

The indicated areas of threshold exceedances are largely a reflection of the areas of sediment confluence due to the proximity to key activity areas, where there is a sustained input of suspended sediments over periods of several months, and the influence of local metocean conditions acting to inhibit rates of settling and increase rates of resuspension.

The north-south ZoI extents in ecological Zones A and B are broadly similar in both scenarios, stretching from Angel Island to East Intercourse Island, with a larger overall footprint area in Scenario 1 (where pipeline dredging operations will occur during winter) relative to Scenario 2 (where these operations will occur during summer). In the Offshore ecological zone, a significantly larger ZoI is forecast along the pipeline in the vicinity of spoil grounds 2B and 5A for Scenario 1 than for Scenario 2. Both of these findings are largely a consequence of the lower thresholds applicable during the winter period, and consequently the lower levels of dredge-excess SSC required to cause exceedances. In a similar manner, the larger ZoI predicted at the offshore borrow ground for Scenario 2 (where, following project commencement in summer, pipeline backfill operations will occur during winter) than for Scenario 1 (where these operations will occur during summer) is attributable to the lower winter thresholds.

The ZoMI threshold exceedances in isolated pockets of King Bay and around the Intercourse Islands may be attributable to the combined effects of model bathymetry and hydrodynamics, representing sediments that are transported into the shallowest-possible grid cells and then “trapped” upon reversal of the tide. While it is clear that there is a potential for dredged sediments to be found in the indicated areas, the persistently high concentrations at the water-land boundaries may be overstated – particularly in light of the long durations required to trigger the ZoMI thresholds.

No ZoHI threshold exceedances are predicted to occur in either scenario.

**Table 5.1 Index of the Zol, ZoMI and ZoHI figures for each scenario.**

<b>Management Zone</b>	<b>Scenario 1</b>	<b>Scenario 2</b>
Zone of Influence (95 <sup>th</sup> percentile): 24-hour rolling average of total SSC	Figure 5.5	Figure 5.14
Zone of Moderate Impact: 3-day (Zones A and B) and 28-day (Offshore) rolling average of total SSC	Figure 5.6	Figure 5.15
Zone of Moderate Impact: 7-day (Zones A and B) and 28-day (Offshore) rolling average of total SSC	Figure 5.7	Figure 5.16
Zone of Moderate Impact: 10-day (Zones A and B) and 28-day (Offshore) rolling average of total SSC	Figure 5.8	Figure 5.17
Zone of Moderate Impact: 14-day (Zones A and B) and 28-day (Offshore) rolling average of total SSC	Figure 5.9	Figure 5.18
Zone of High Impact: 3-day (Zones A and B) and 28-day (Offshore) rolling average of total SSC	Figure 5.10	Figure 5.19
Zone of High Impact: 7-day (Zones A and B) and 28-day (Offshore) rolling average of total SSC	Figure 5.11	Figure 5.20
Zone of High Impact: 10-day (Zones A and B) and 28-day (Offshore) rolling average of total SSC	Figure 5.12	Figure 5.21
Zone of High Impact: 14-day (Zones A and B) and 28-day (Offshore) rolling average of total SSC	Figure 5.13	Figure 5.22



## 5.2.2 Spatial Outcomes

### 5.2.2.1 Scenario 1: Dredging Operations Commencing during Winter, with Backfill Material Sourced from Borrow Ground A

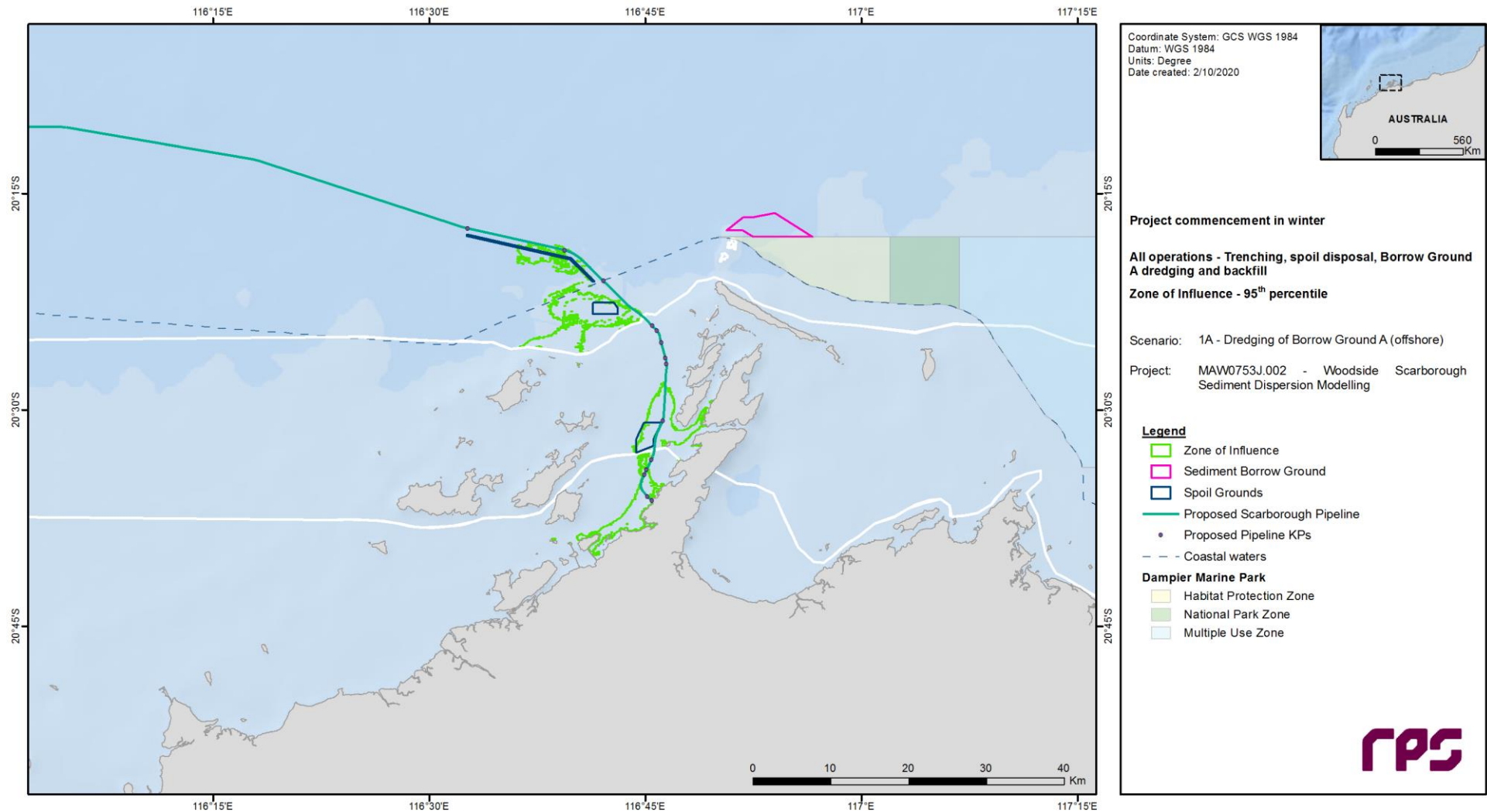


Figure 5.5 Predicted 95<sup>th</sup> percentile Zone of Influence following application of the appropriate spatial thresholds in Table 4.2 to a 24-hour rolling average of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).

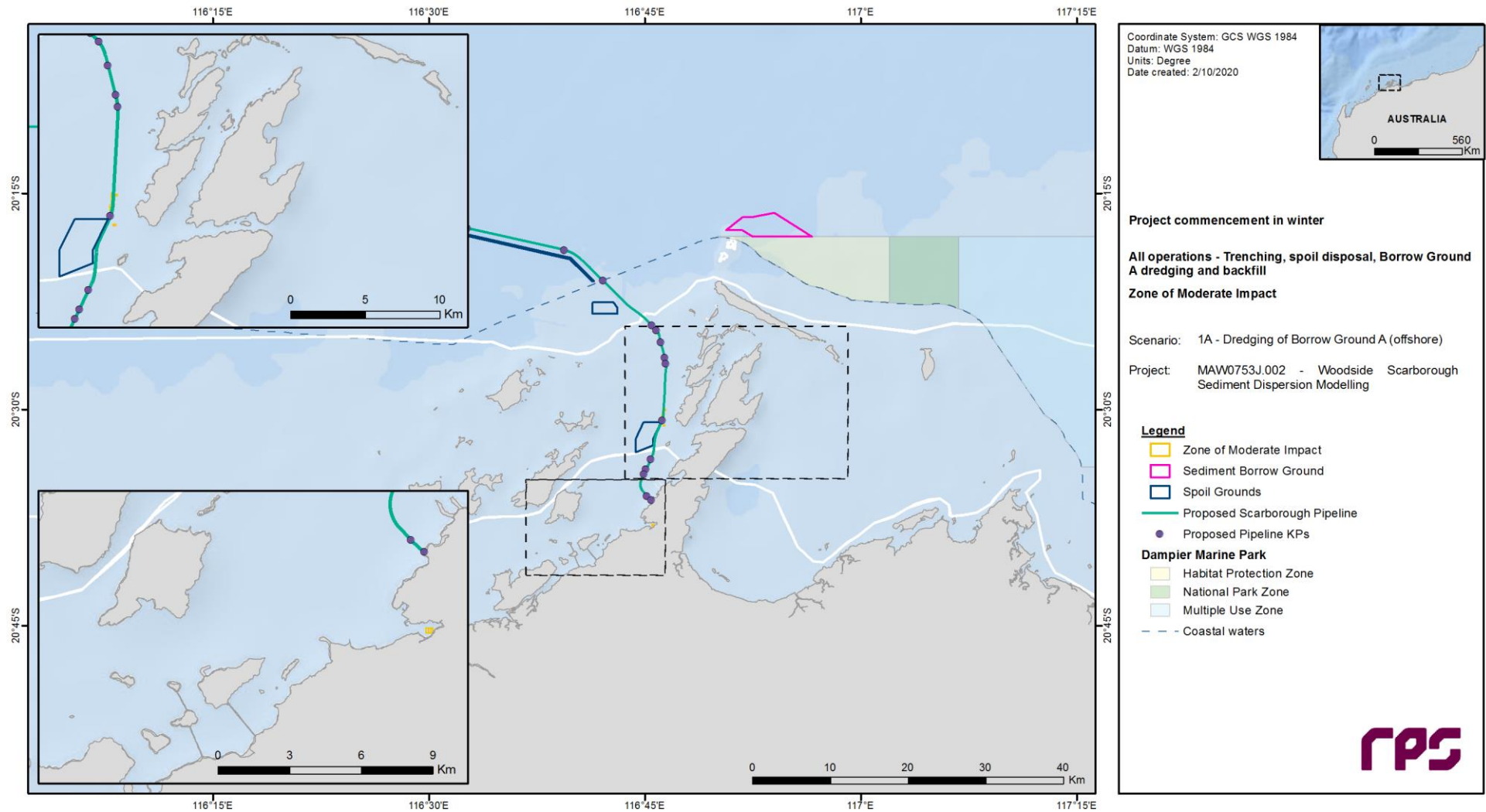
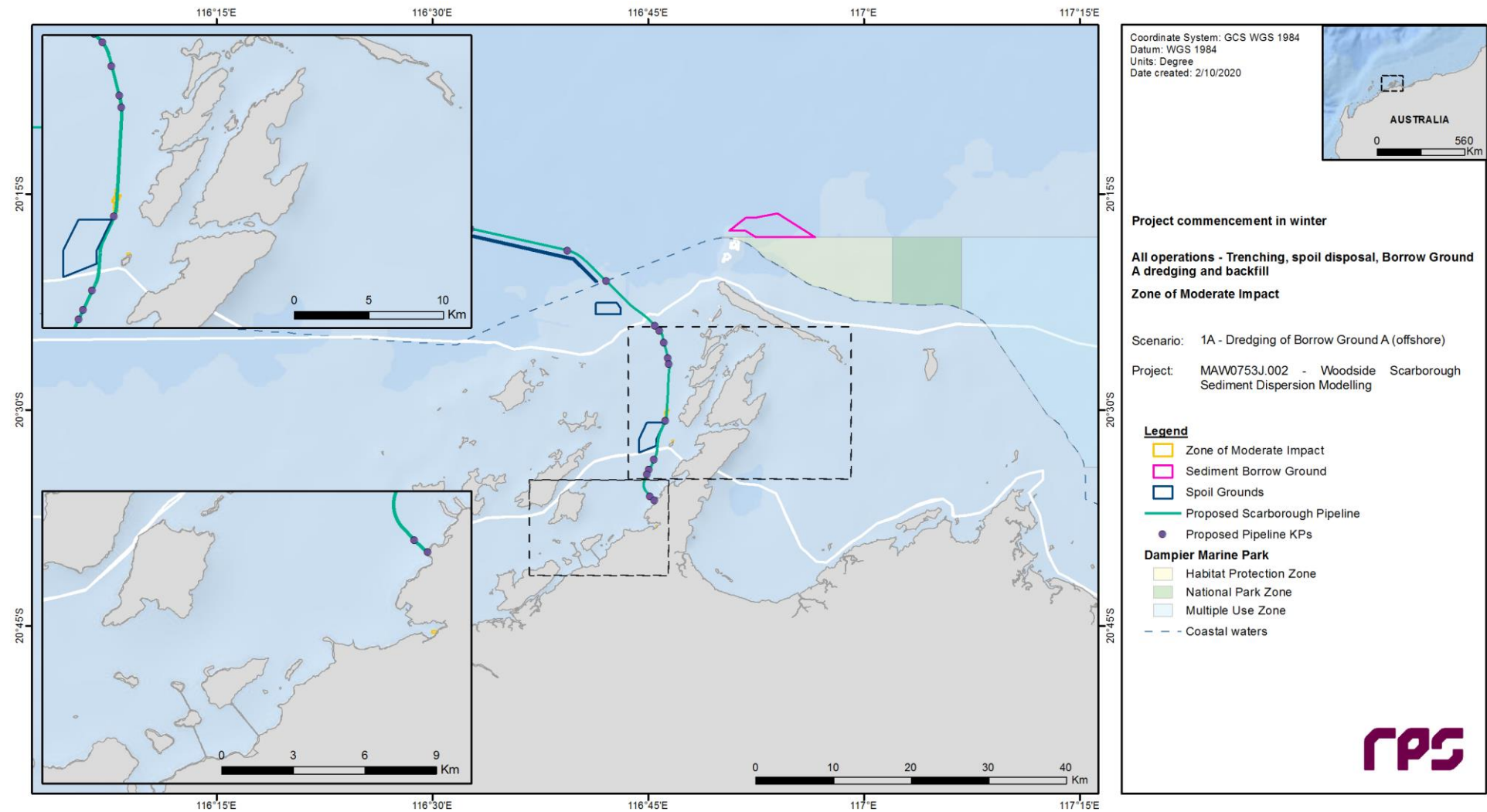


Figure 5.6 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 3-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).



**Figure 5.7 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 7-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).**

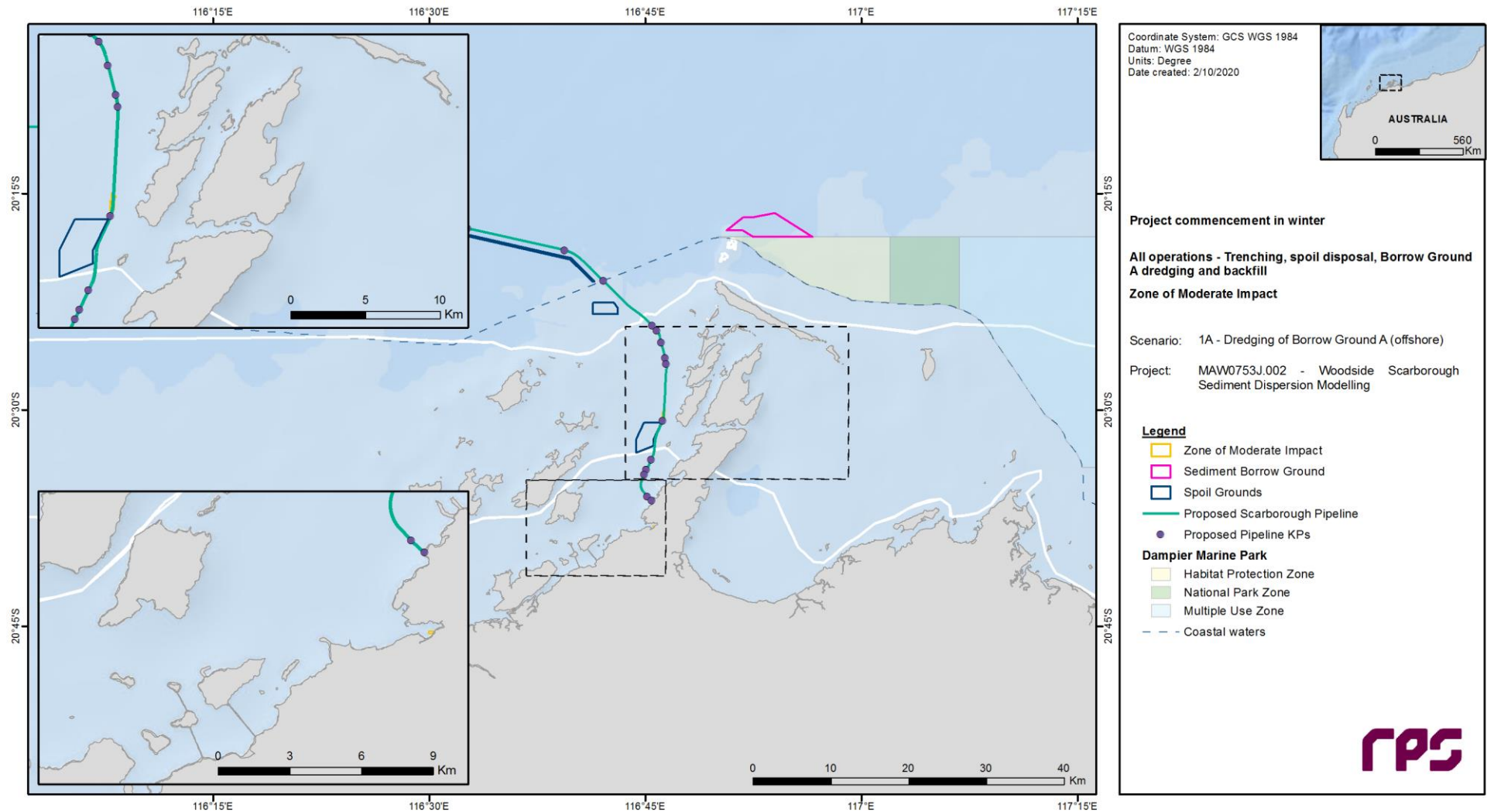


Figure 5.8 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 10-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).



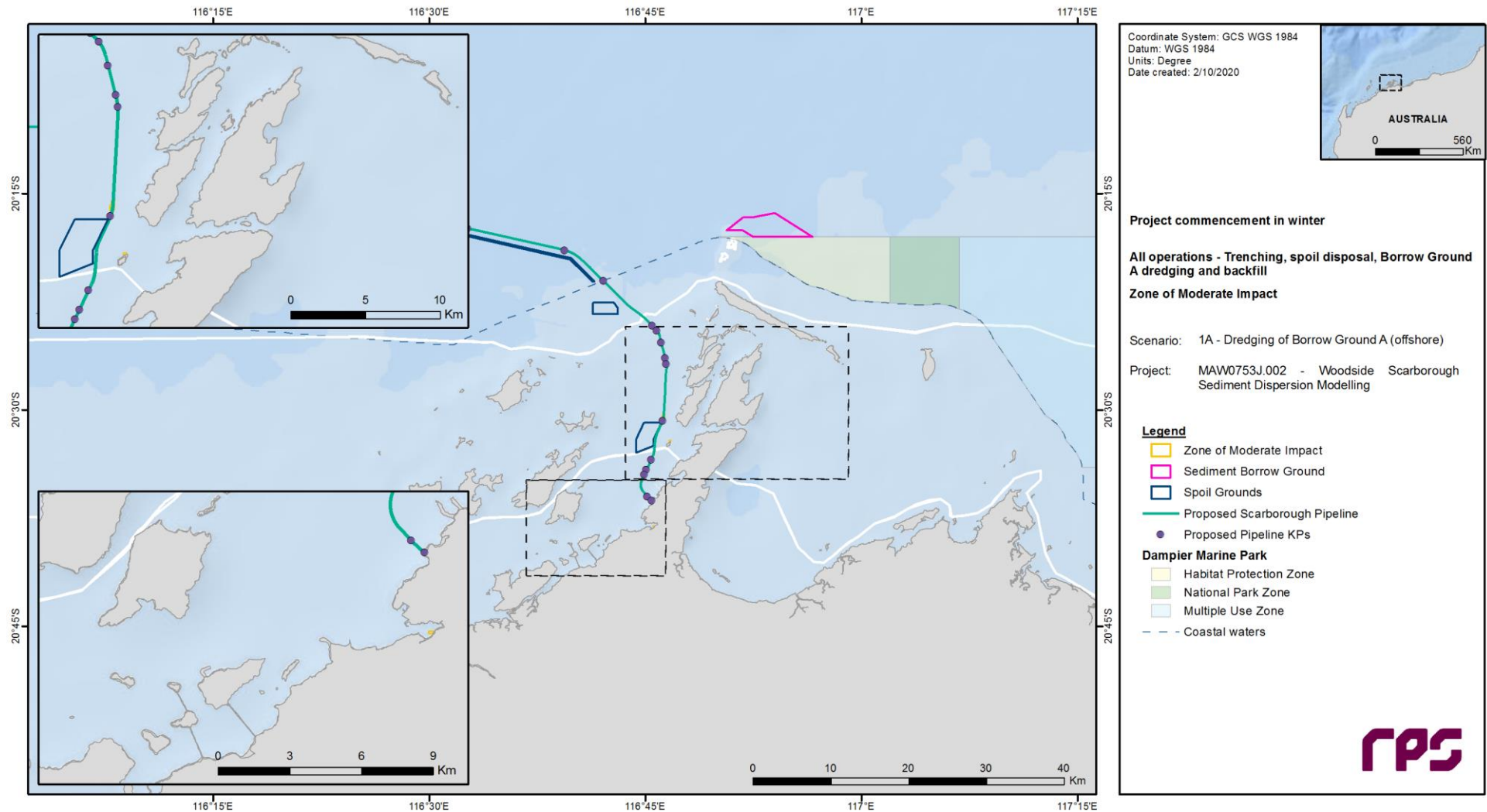


Figure 5.9 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 14-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).

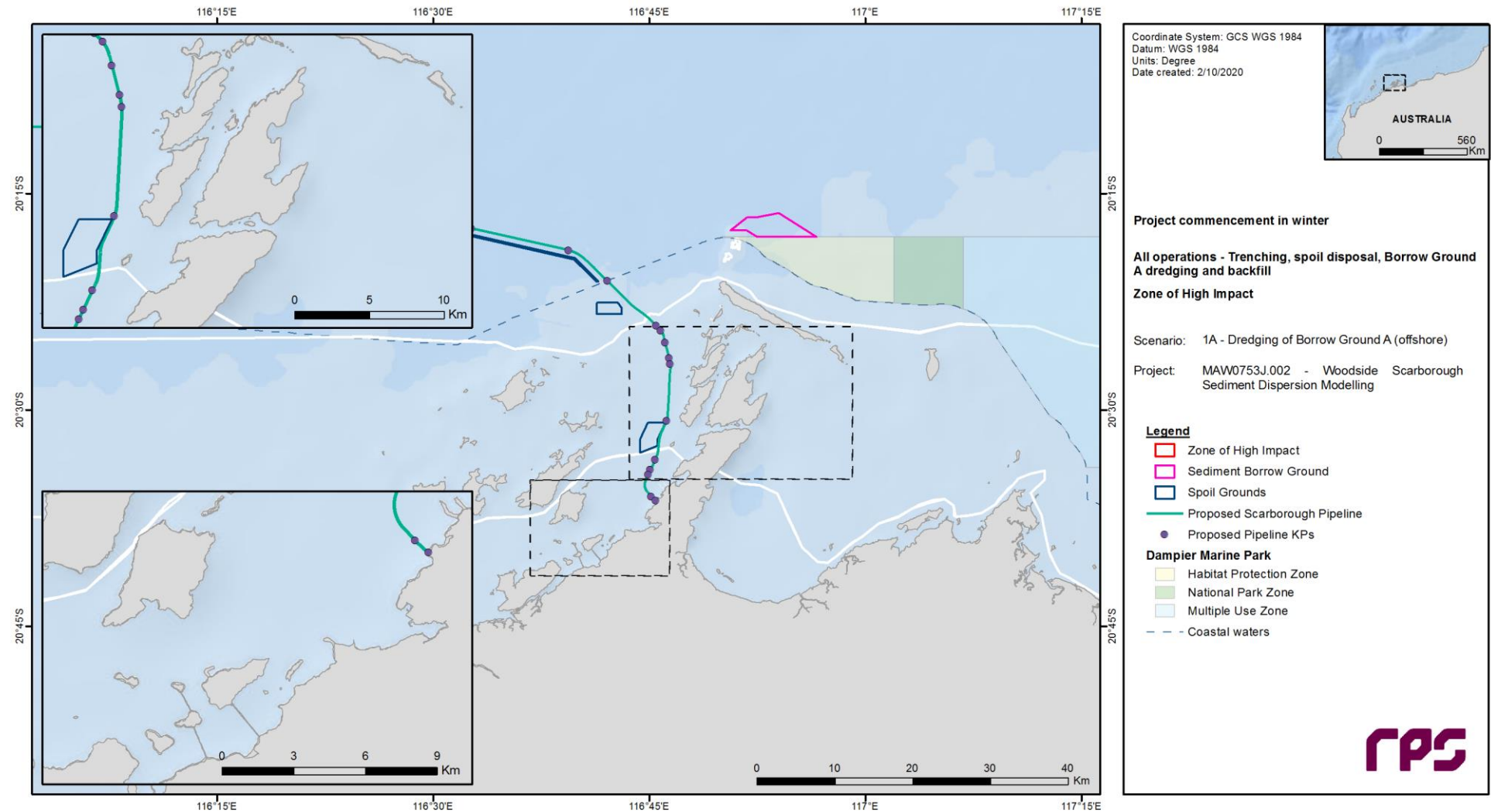


Figure 5.10 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 3-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).



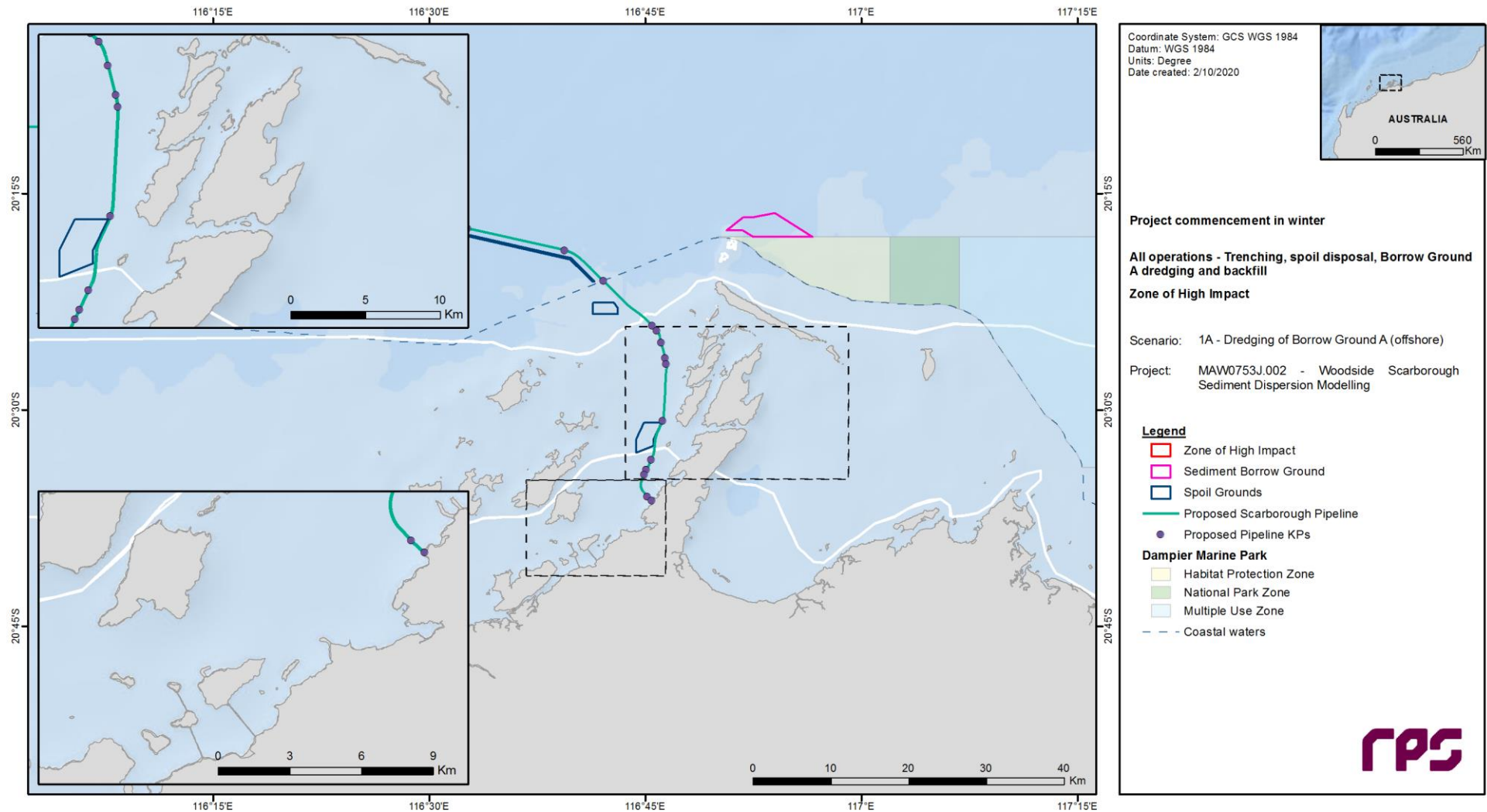


Figure 5.11 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 7-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).

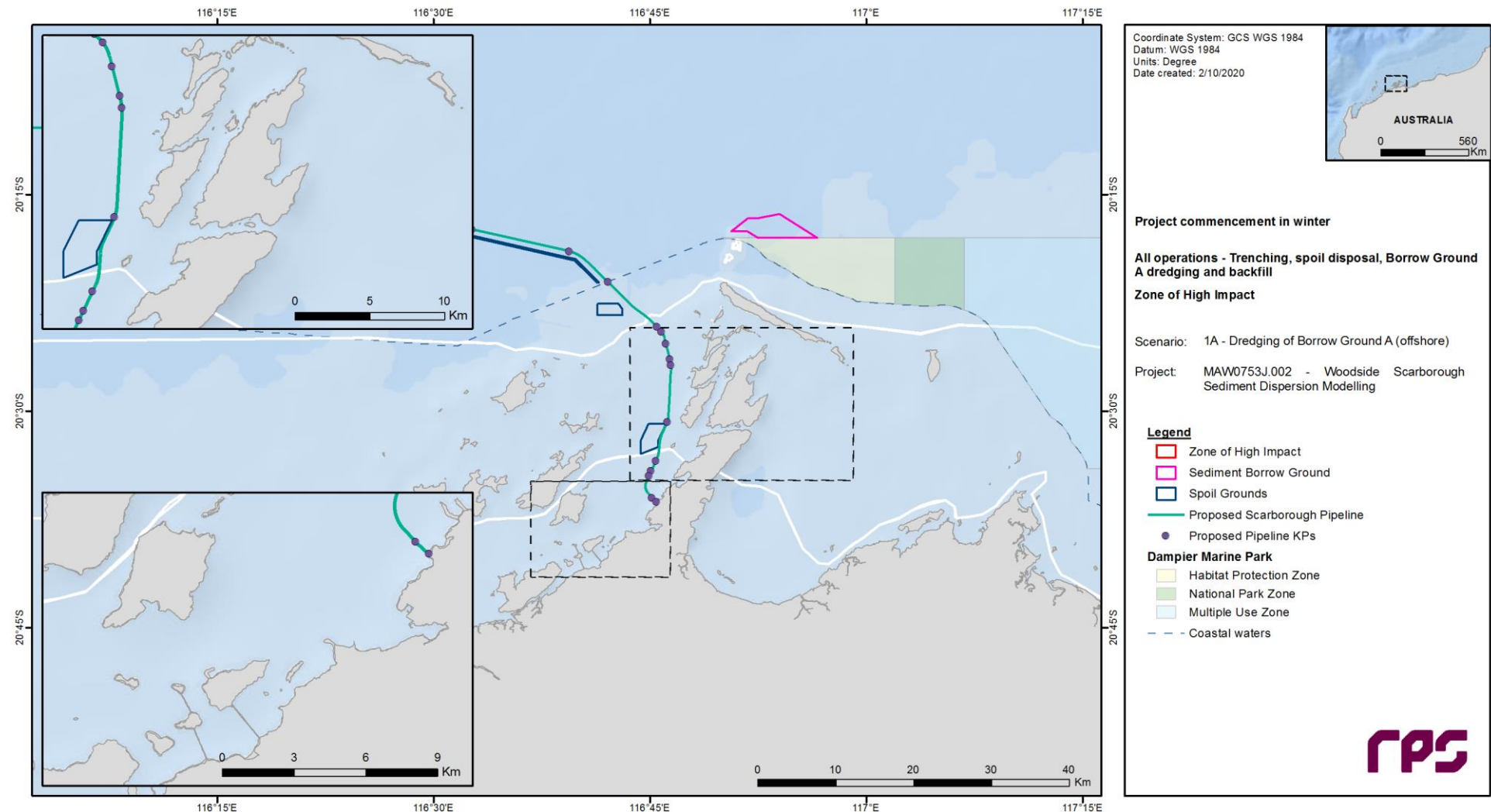


Figure 5.12 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 10-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).

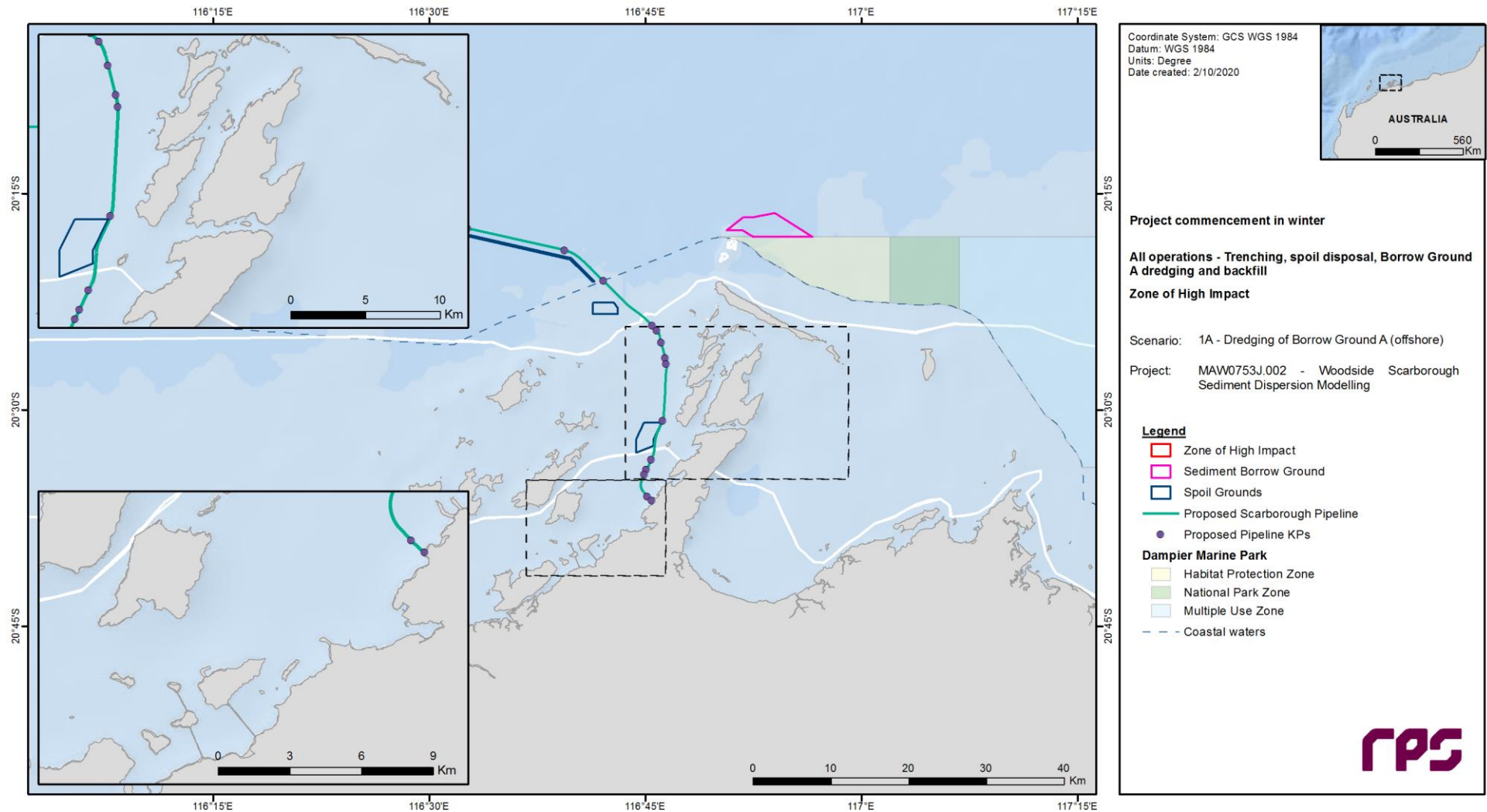
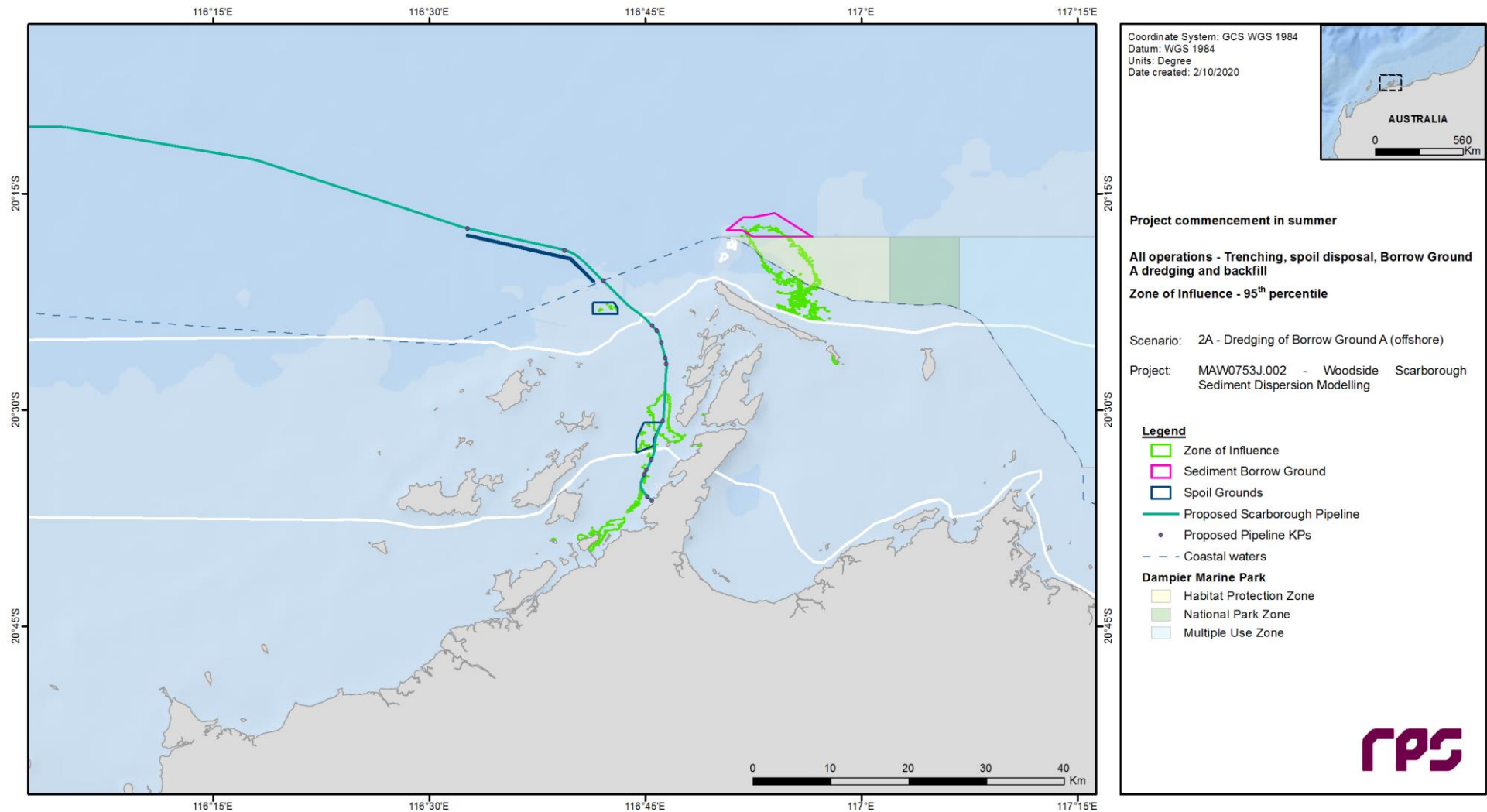


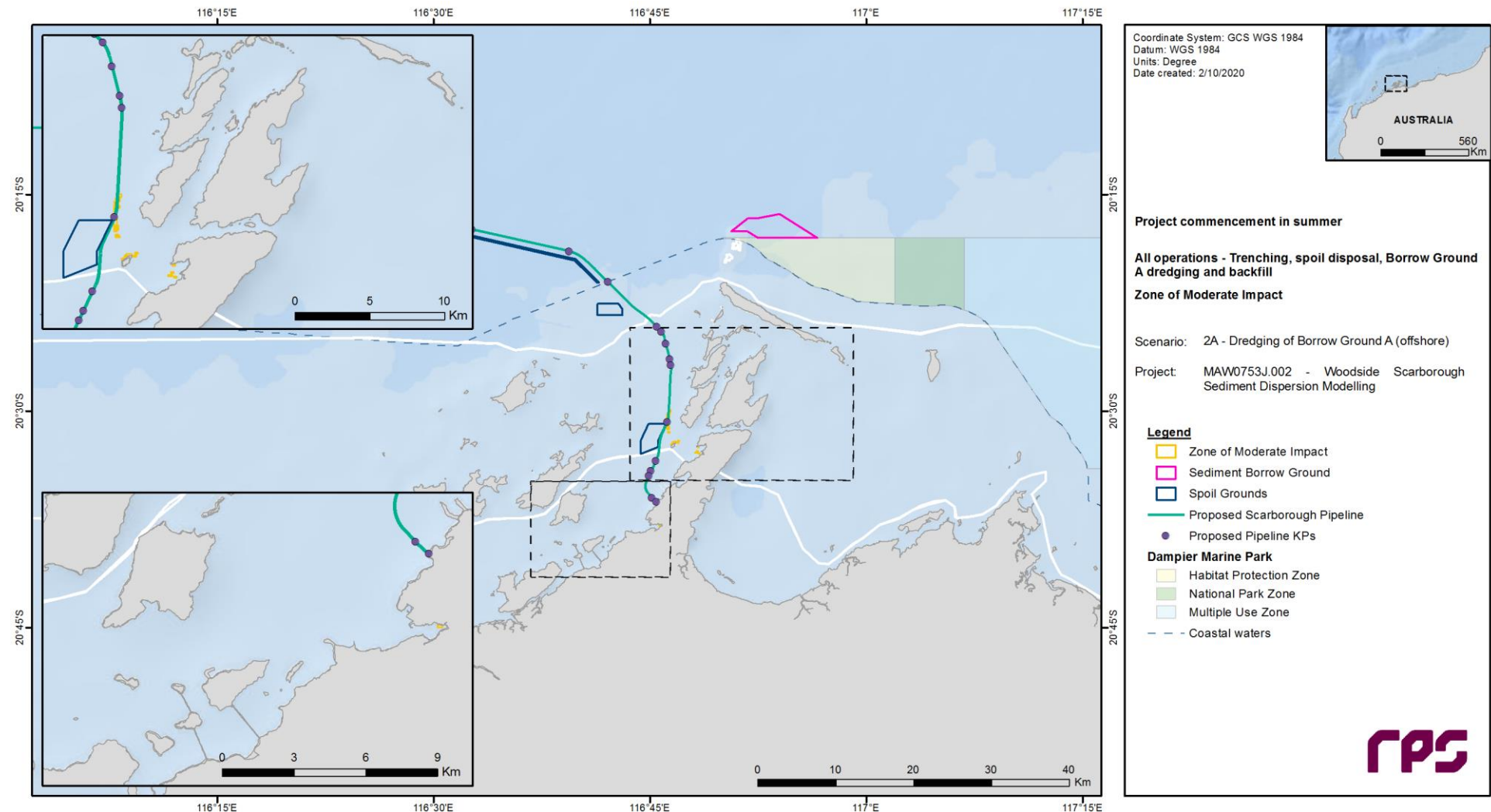
Figure 5.13 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 14-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> July 2016 to 23<sup>rd</sup> May 2017).

### 5.2.2.2 Scenario 2: Dredging Operations Commencing during Summer, with Backfill Material Sourced from Borrow Ground A

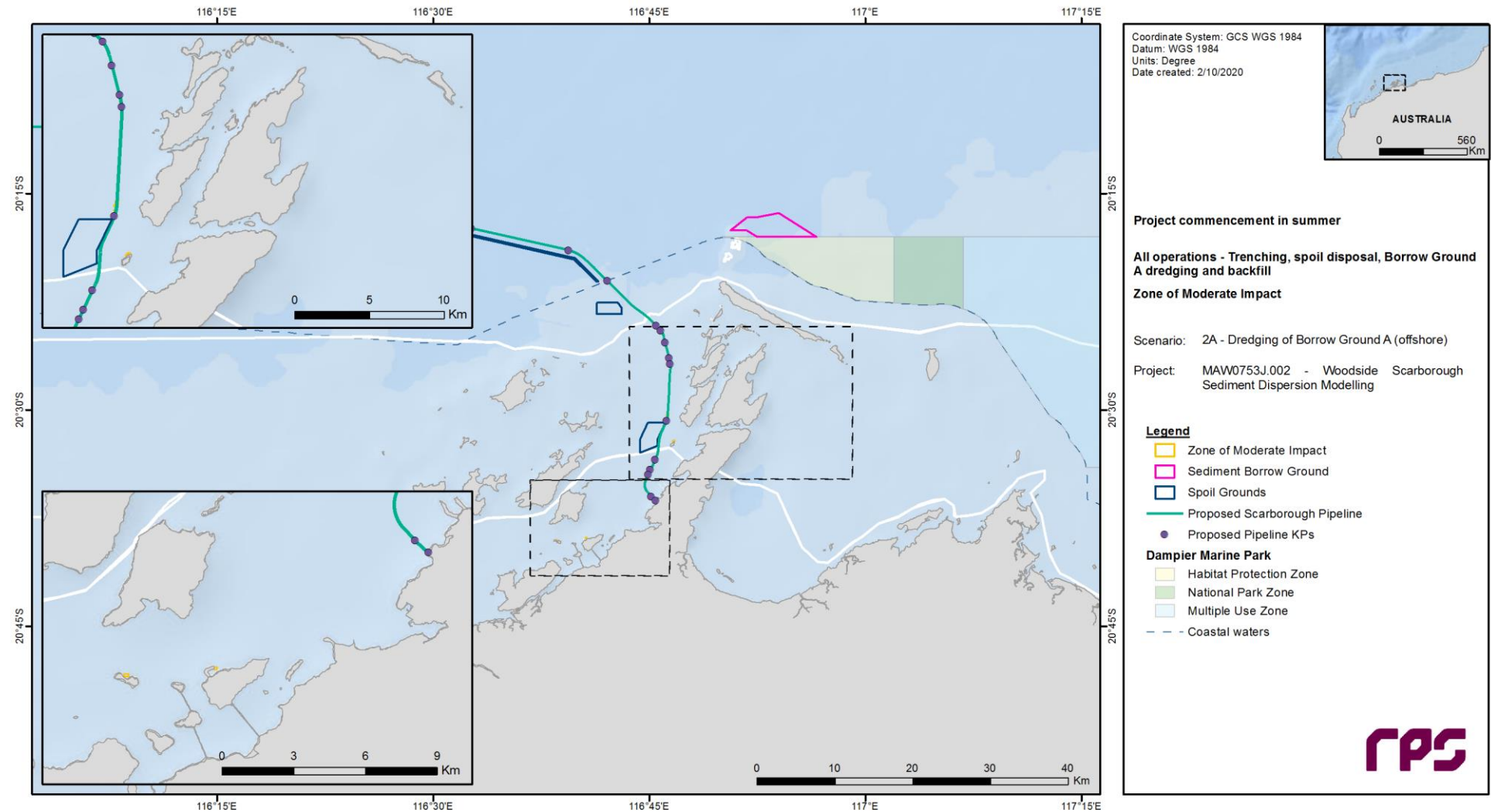


**Figure 5.14 Predicted 95<sup>th</sup> percentile Zone of Influence following application of the appropriate spatial thresholds in Table 4.2 to a 24-hour rolling average of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).**





**Figure 5.15 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 3-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).**



**Figure 5.16 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 7-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).**



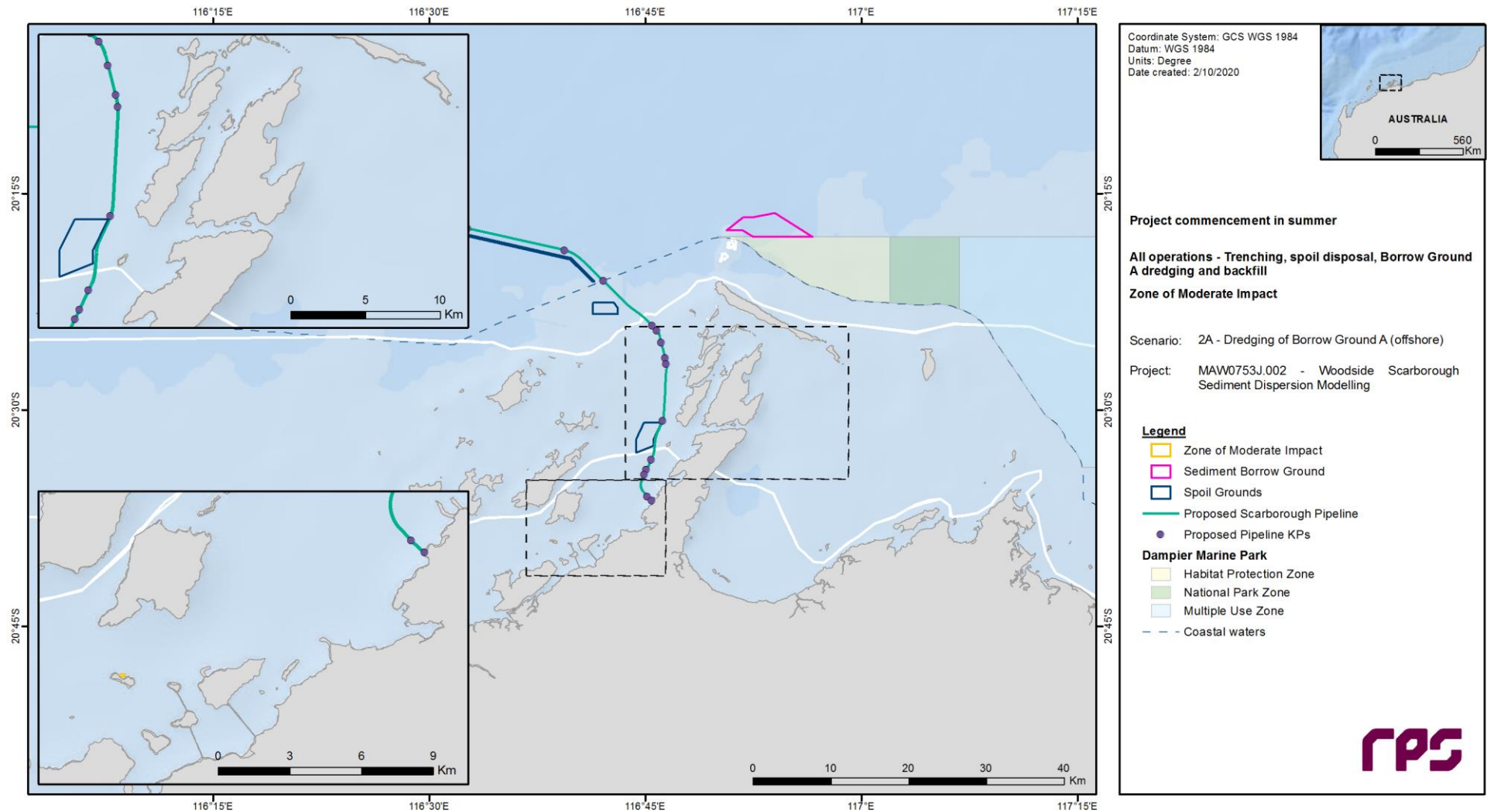
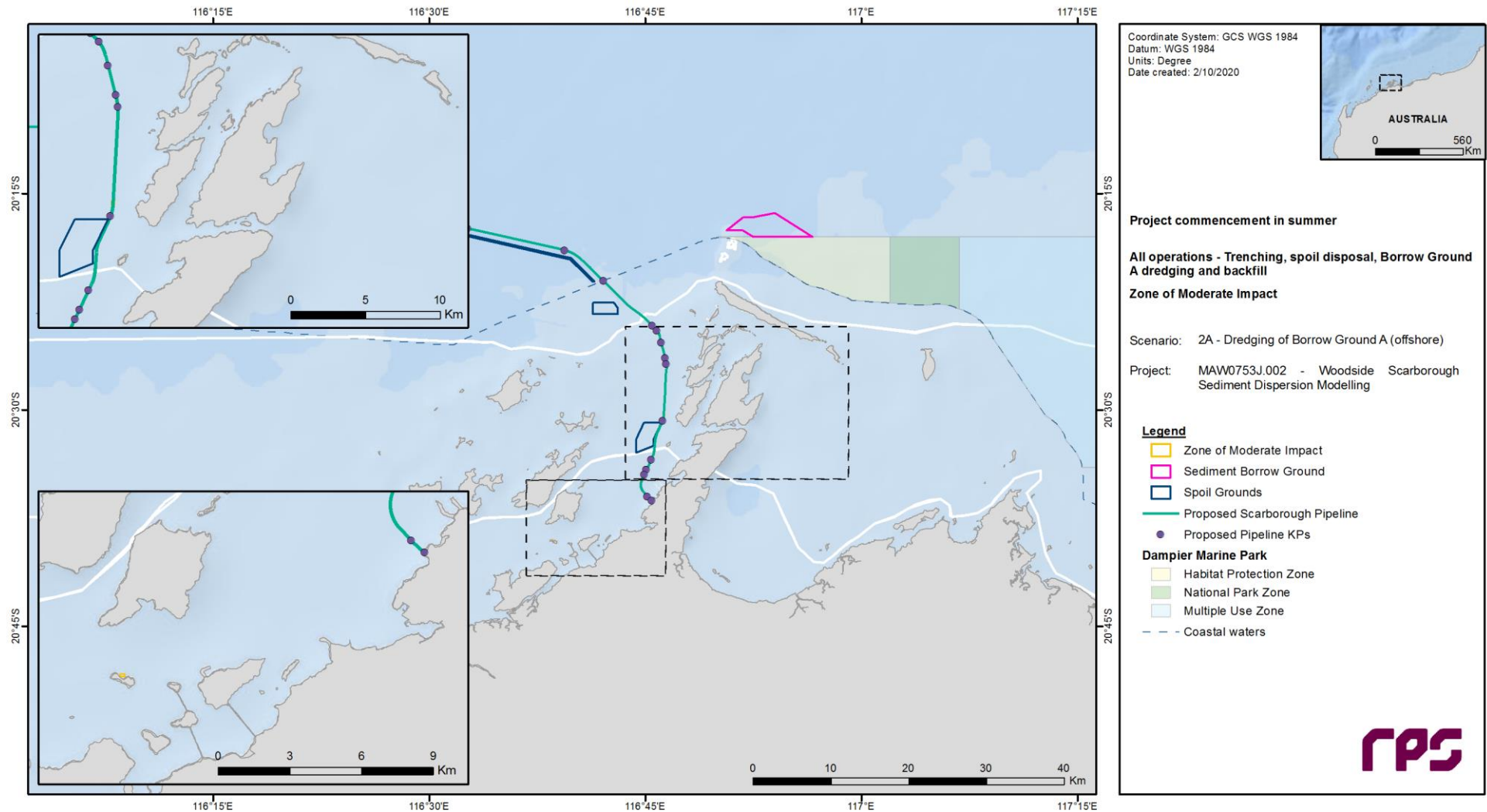


Figure 5.17 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 10-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).



**Figure 5.18 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 14-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).**

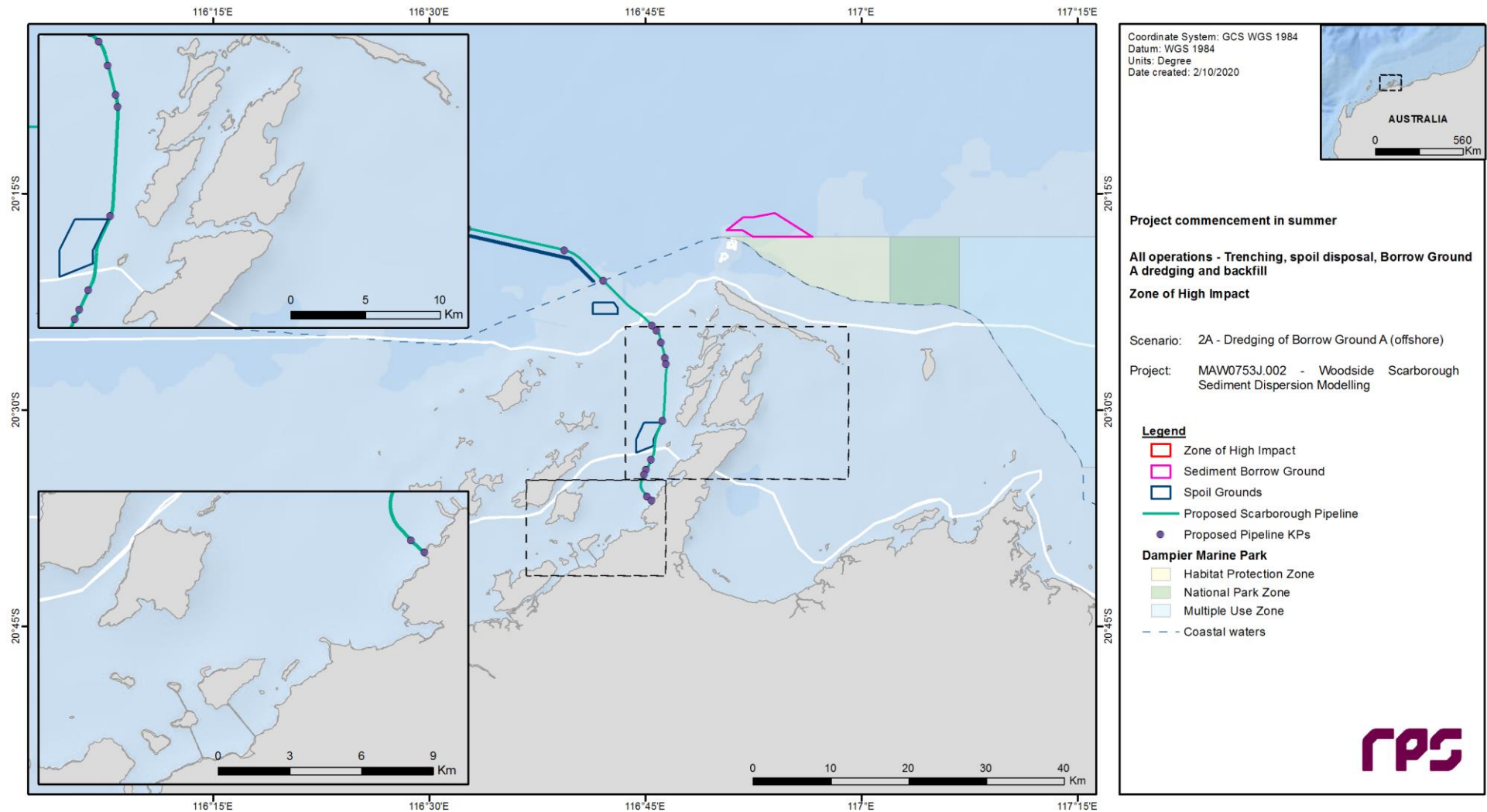


Figure 5.19 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 3-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).

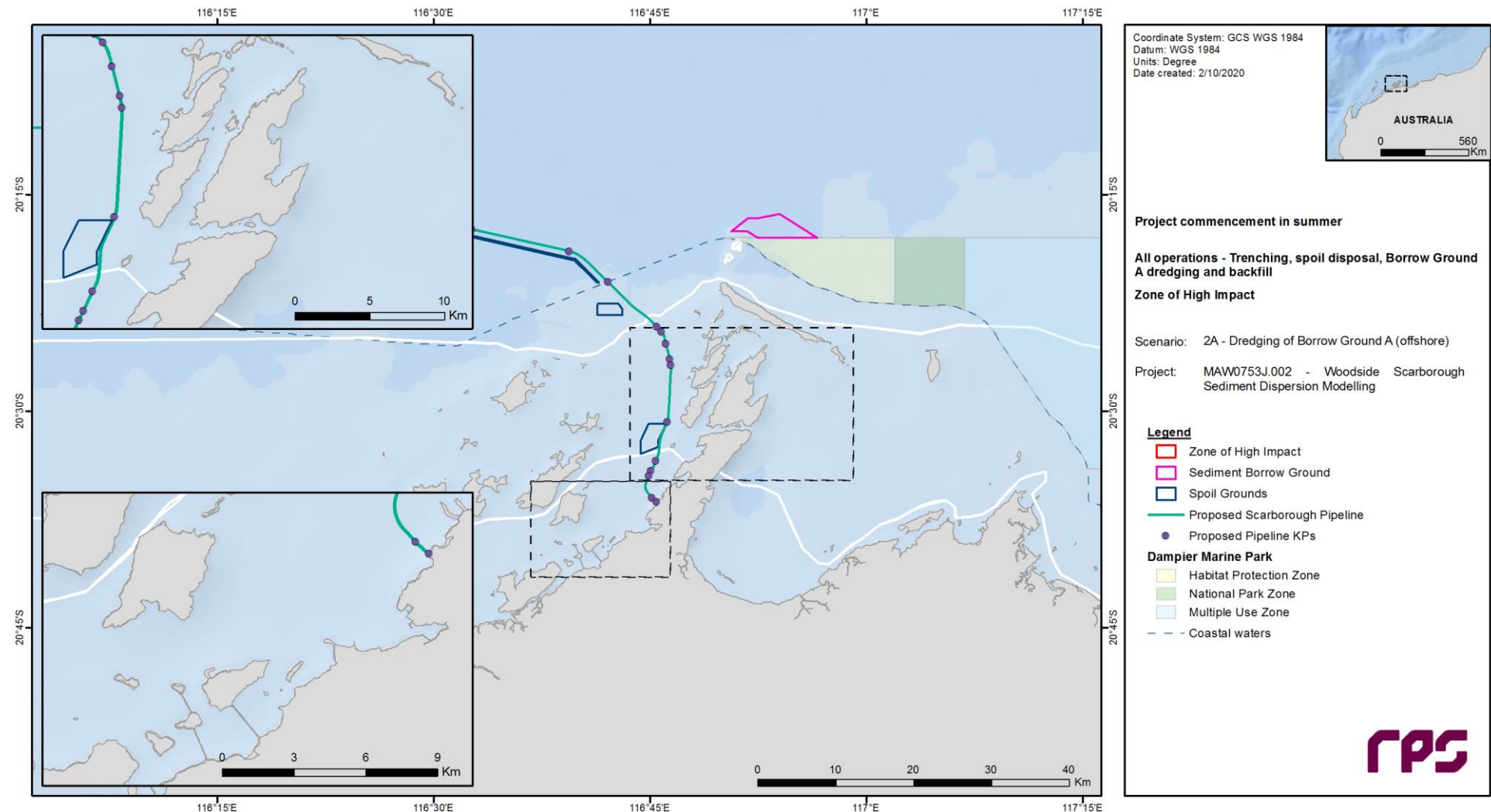


Figure 5.20 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 7-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).



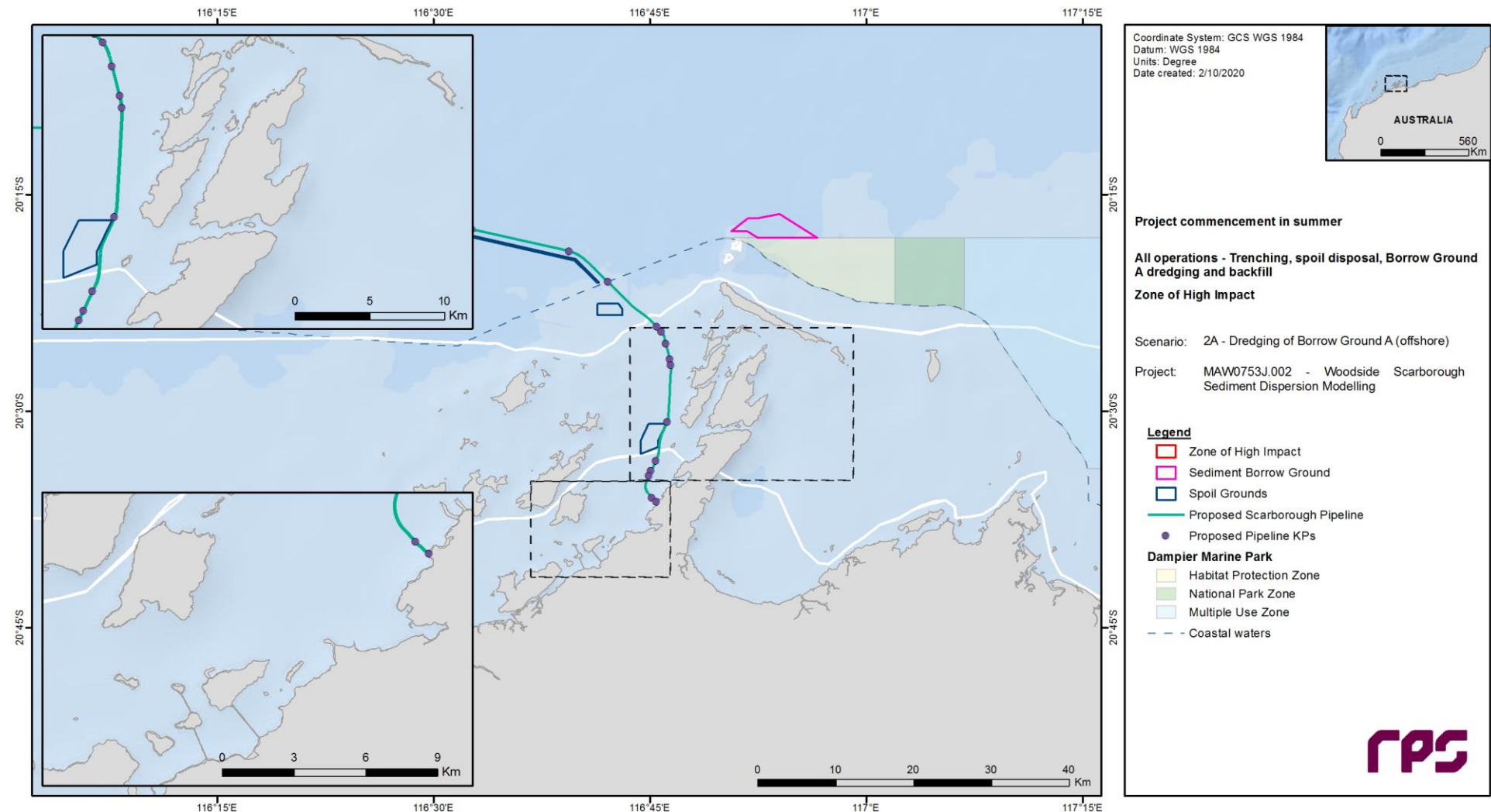


Figure 5.21 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 10-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).

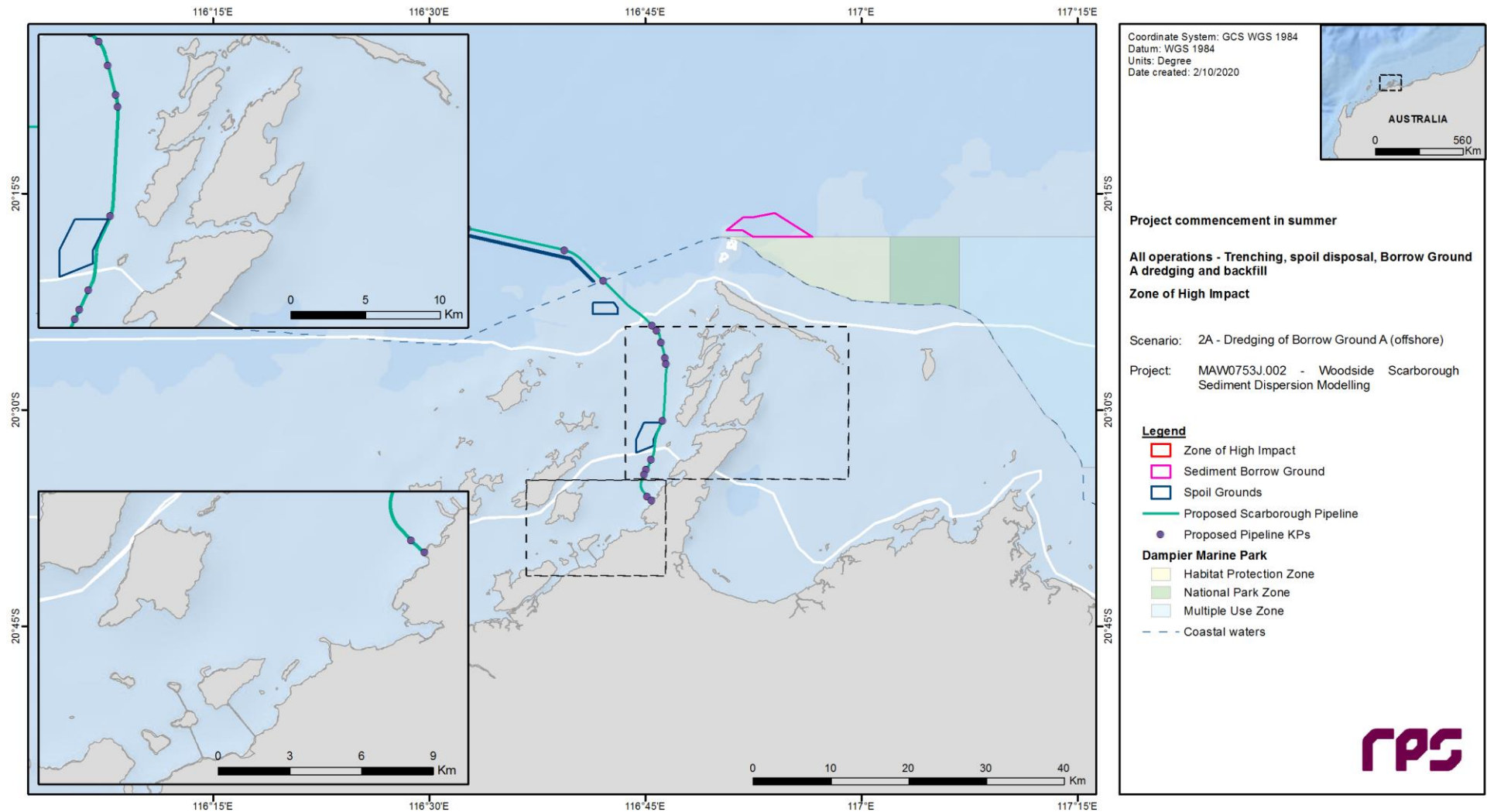


Figure 5.22 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 14-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the entire scenario duration (1<sup>st</sup> January 2017 to 21<sup>st</sup> November 2017).

### 5.3 Activities in Commonwealth Waters

To provide an indication of the characteristics of sediment plumes associated only with activities occurring – or directly related to those occurring – in Commonwealth waters, additional figures are presented in Sections B.1 (Scenario 1) and B.2 (Scenario 2) of Appendix B. These figures comprise overall percentile contours and overall management zone extents, and are representative of the following activities:

- Pipeline trenching and spoil disposal activities only beyond the State waters boundary.
- All borrow-ground dredging activities.
- All pipeline backfill activities (including those within State waters due to the direct correlation of backfill operations with borrow-ground dredging in Commonwealth waters).

It is emphasised that the intention of these outputs is to provide added context to the full-program outcomes described in the preceding sections. By design, the additional outputs exclude the cumulative effects of all dredging and disposal activities occurring within State waters. Therefore, while the influence of sediment plumes originating offshore and migrating to State waters is clear in the figures, the corresponding potential for influence on Commonwealth waters by plumes originating inshore is not fully considered.



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## Appendix A: Additional Figures of Spatial Outcomes

## **A.1 Scenario 1: Dredging Operations Commencing during Winter, with Backfill Material Sourced from Borrow Ground A**

### **A.1.1 Monthly Snapshots**

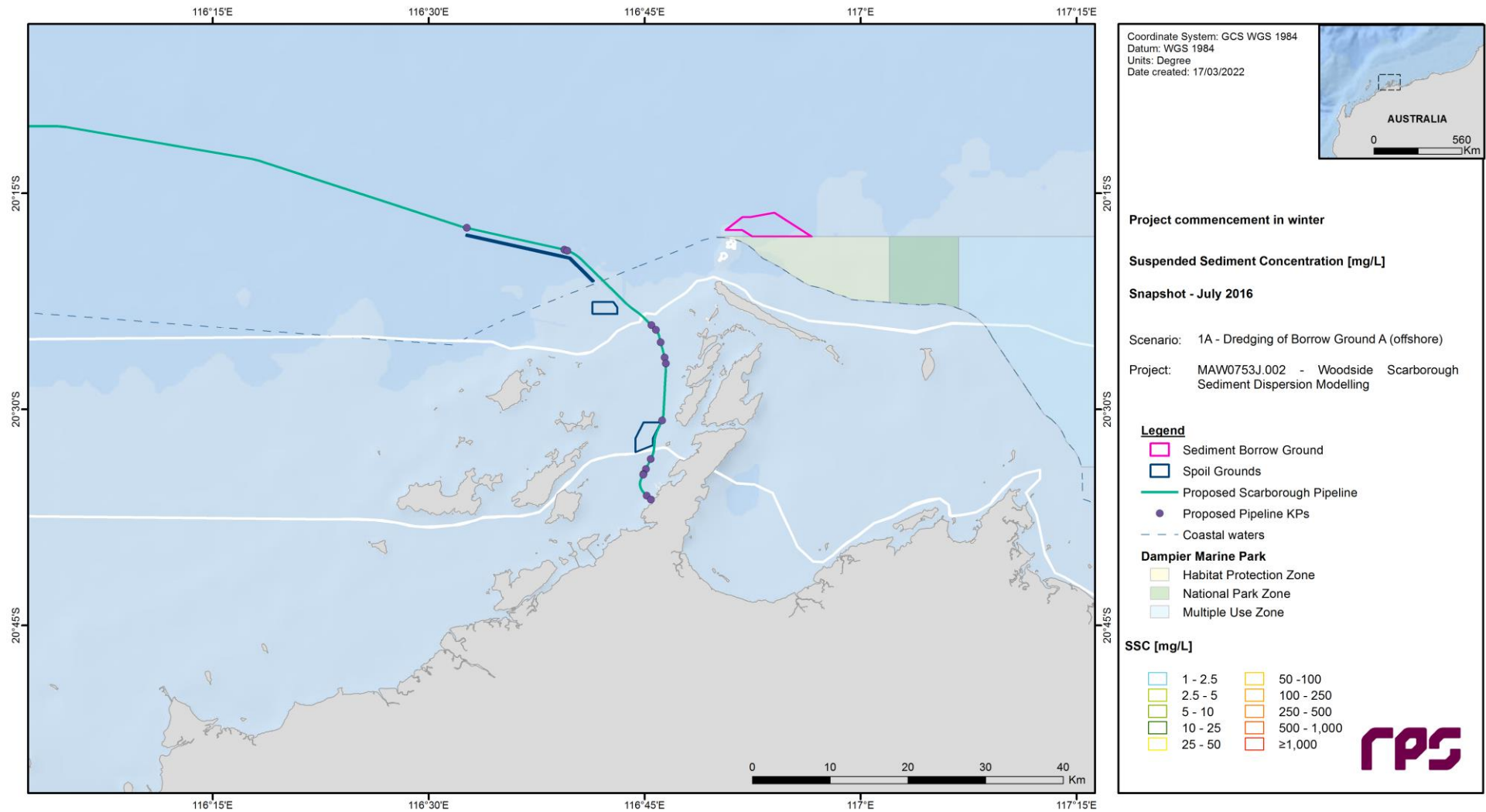


Figure A.1 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> July 2016.

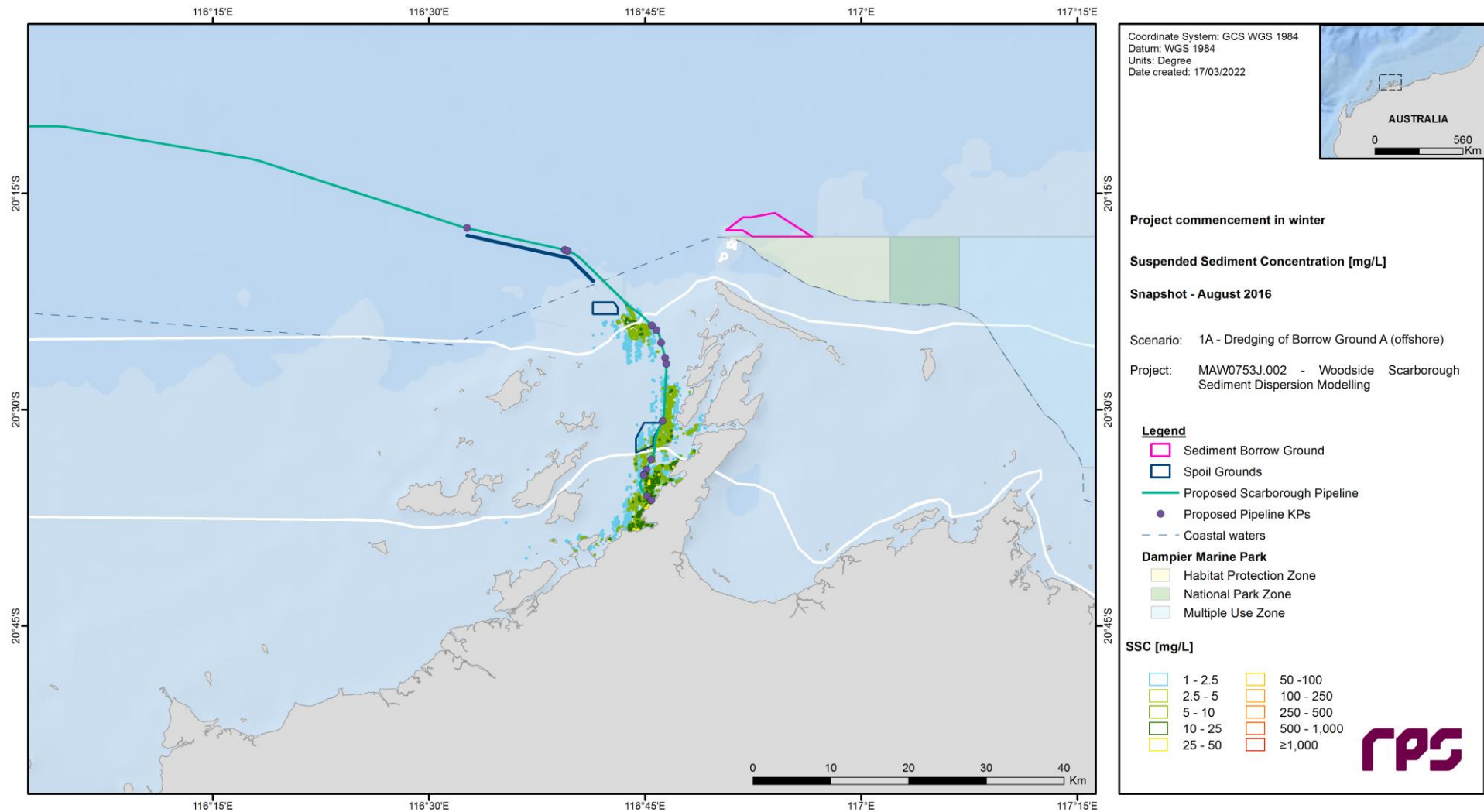


Figure A.2 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> August 2016.



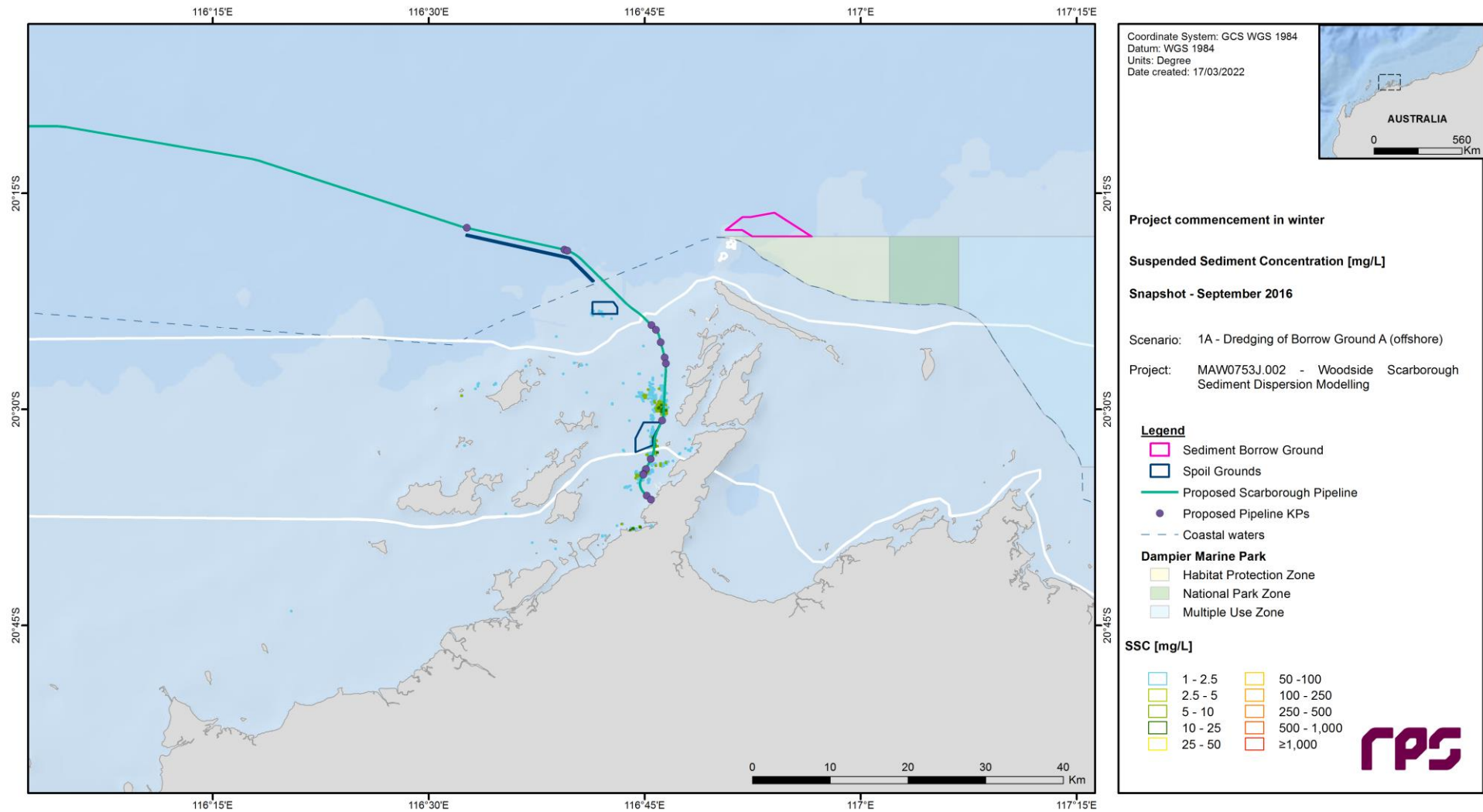


Figure A.3 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> September 2016.

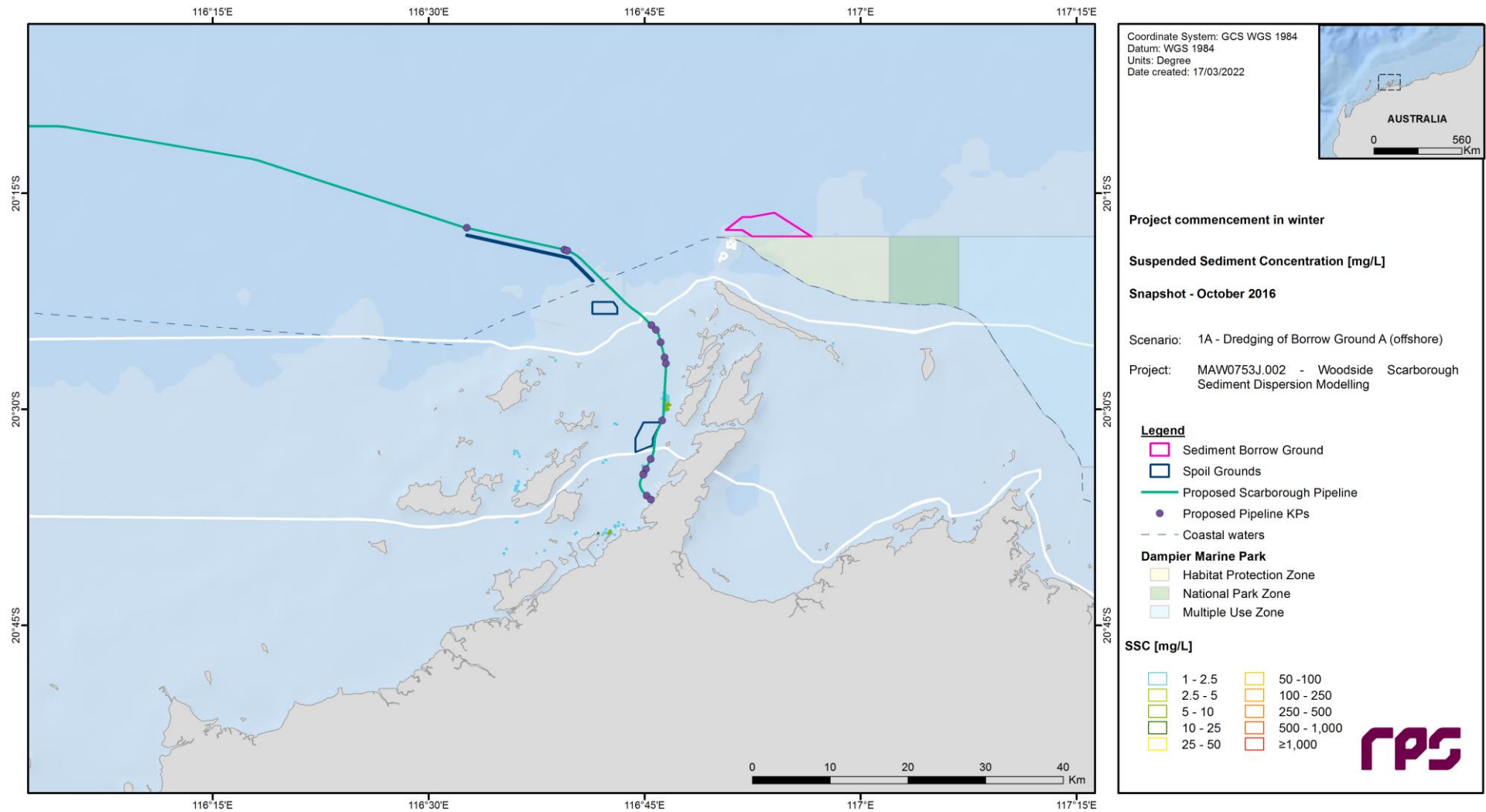


Figure A.4 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> October 2016.

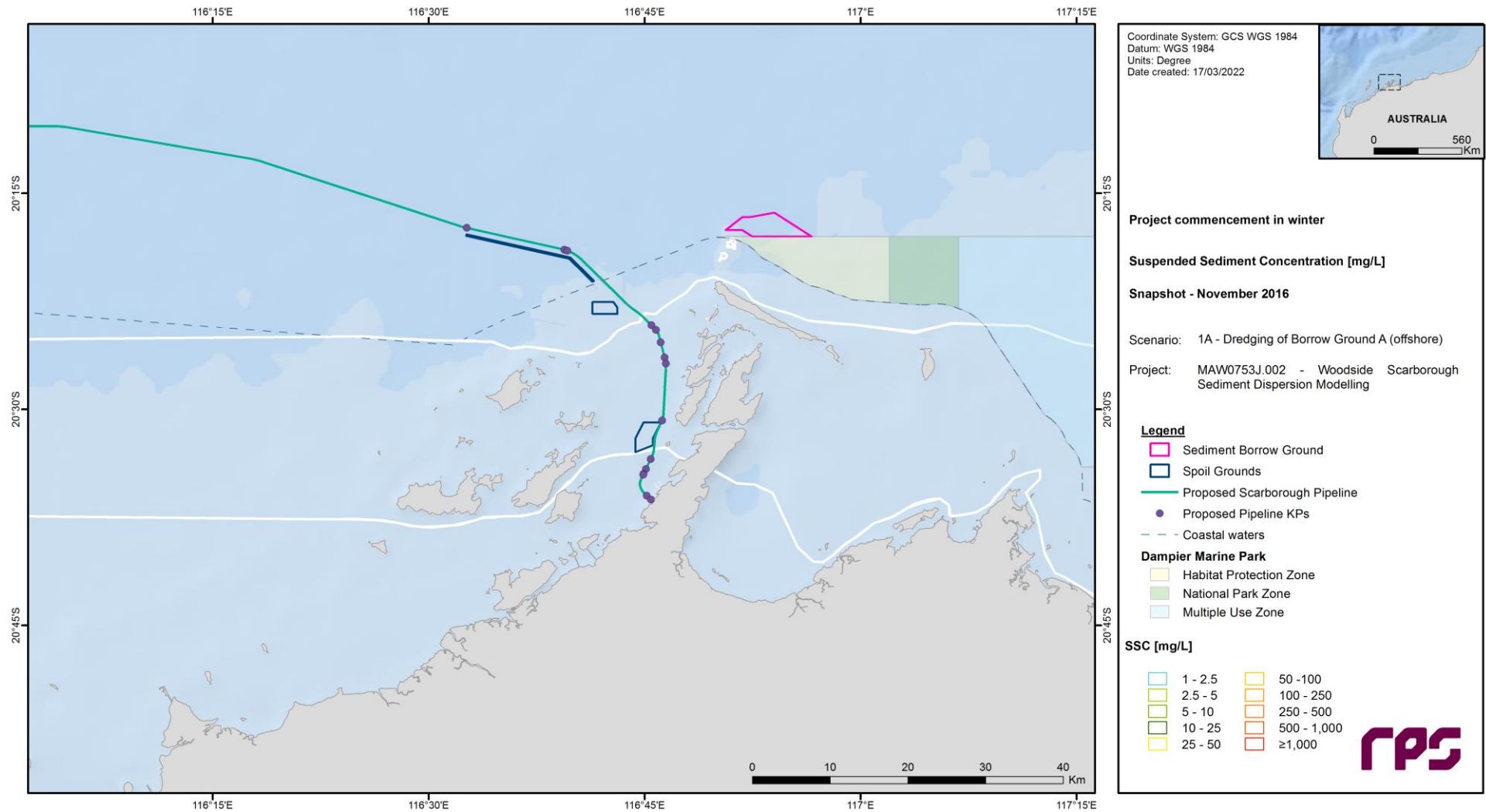


Figure A.5 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> November 2016.

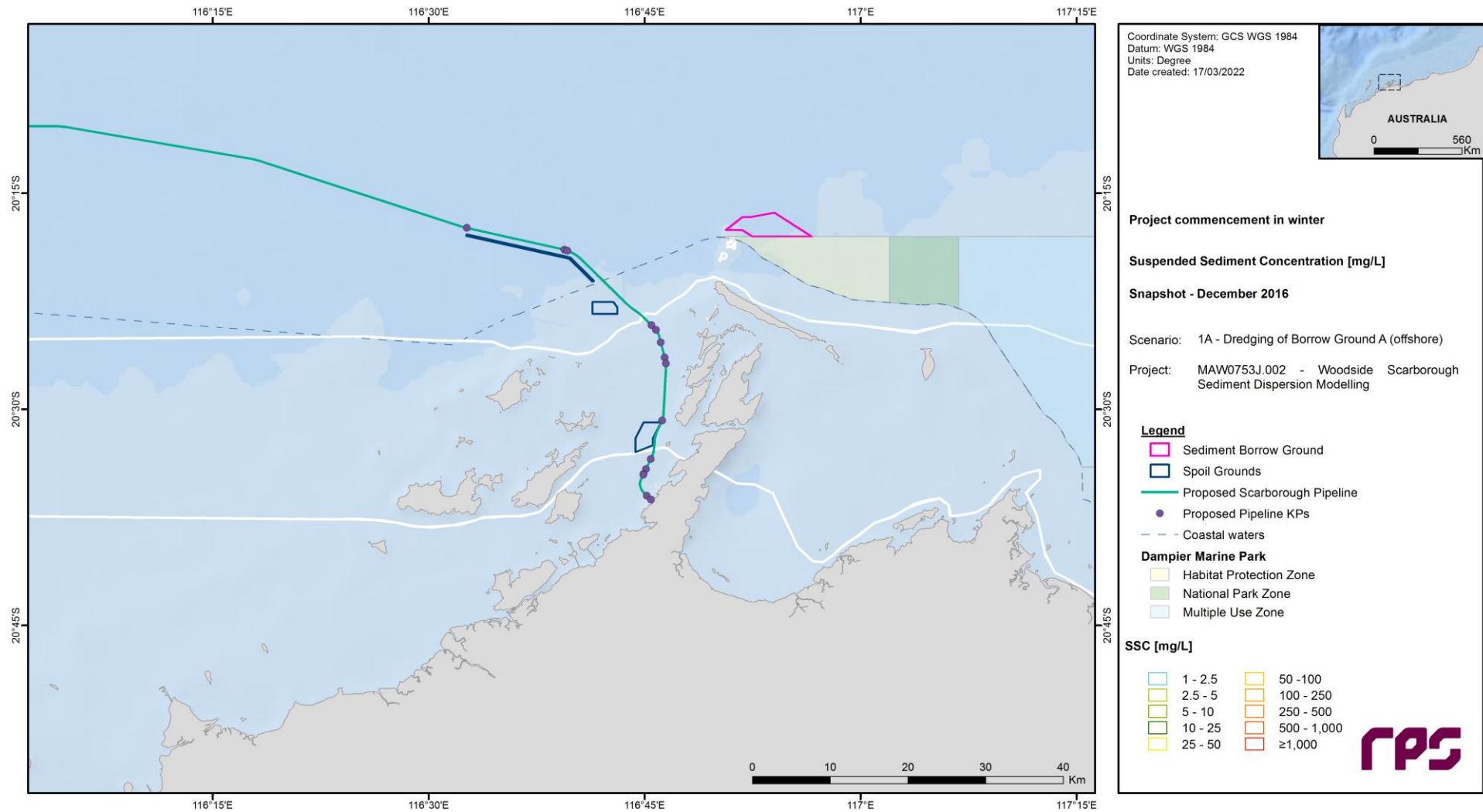


Figure A.6 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> December 2016.

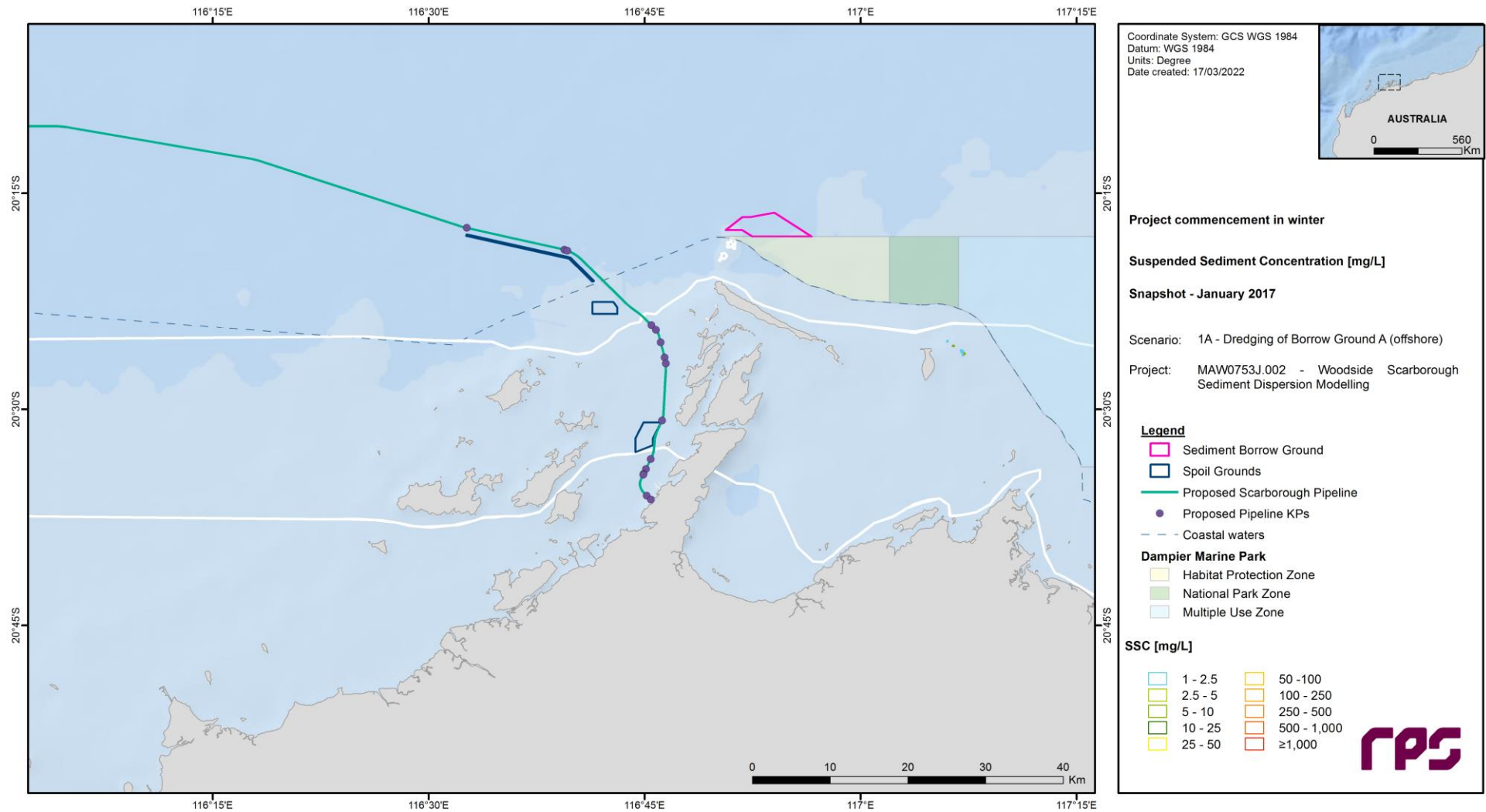


Figure A.7 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> January 2017.



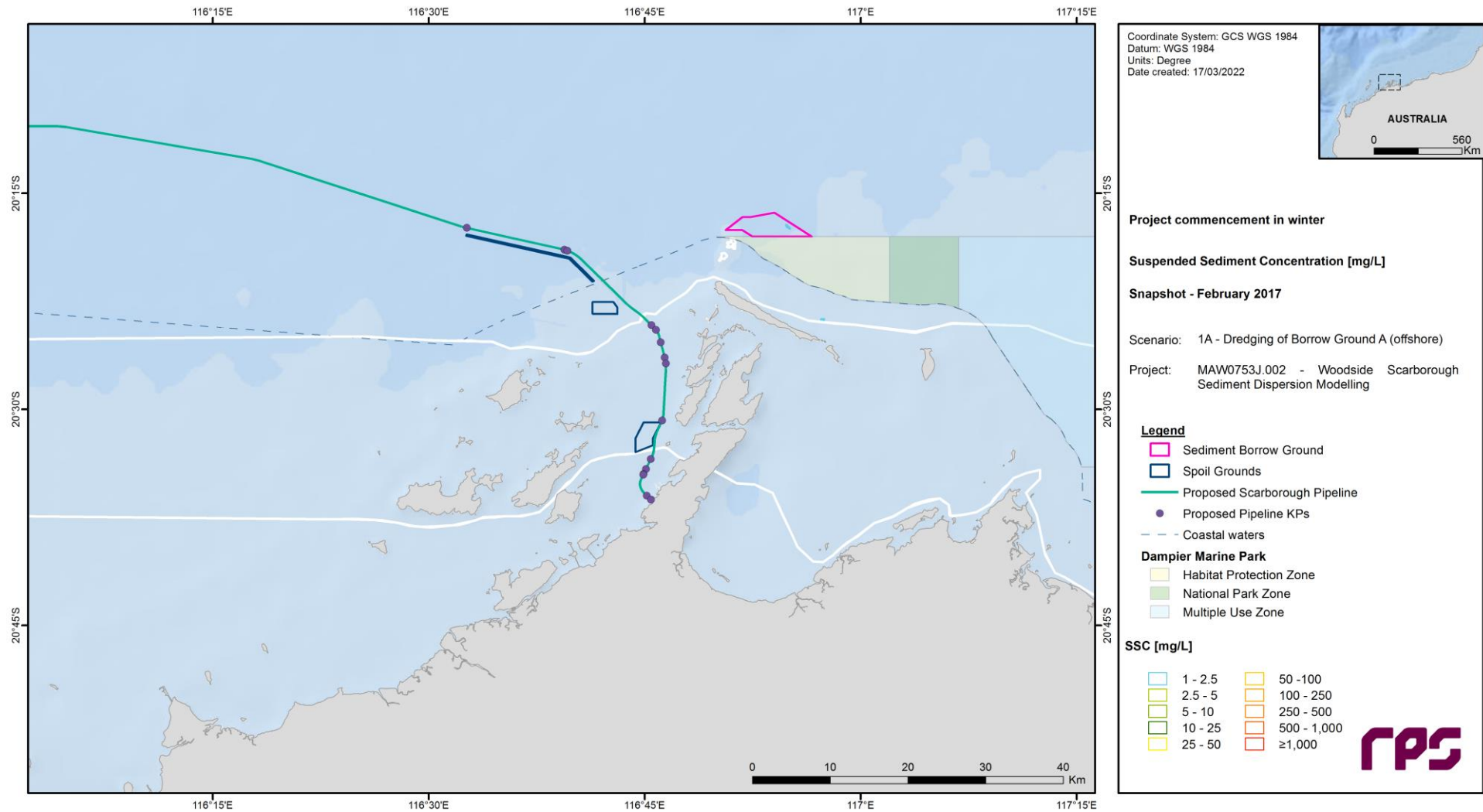


Figure A.8 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> February 2017.

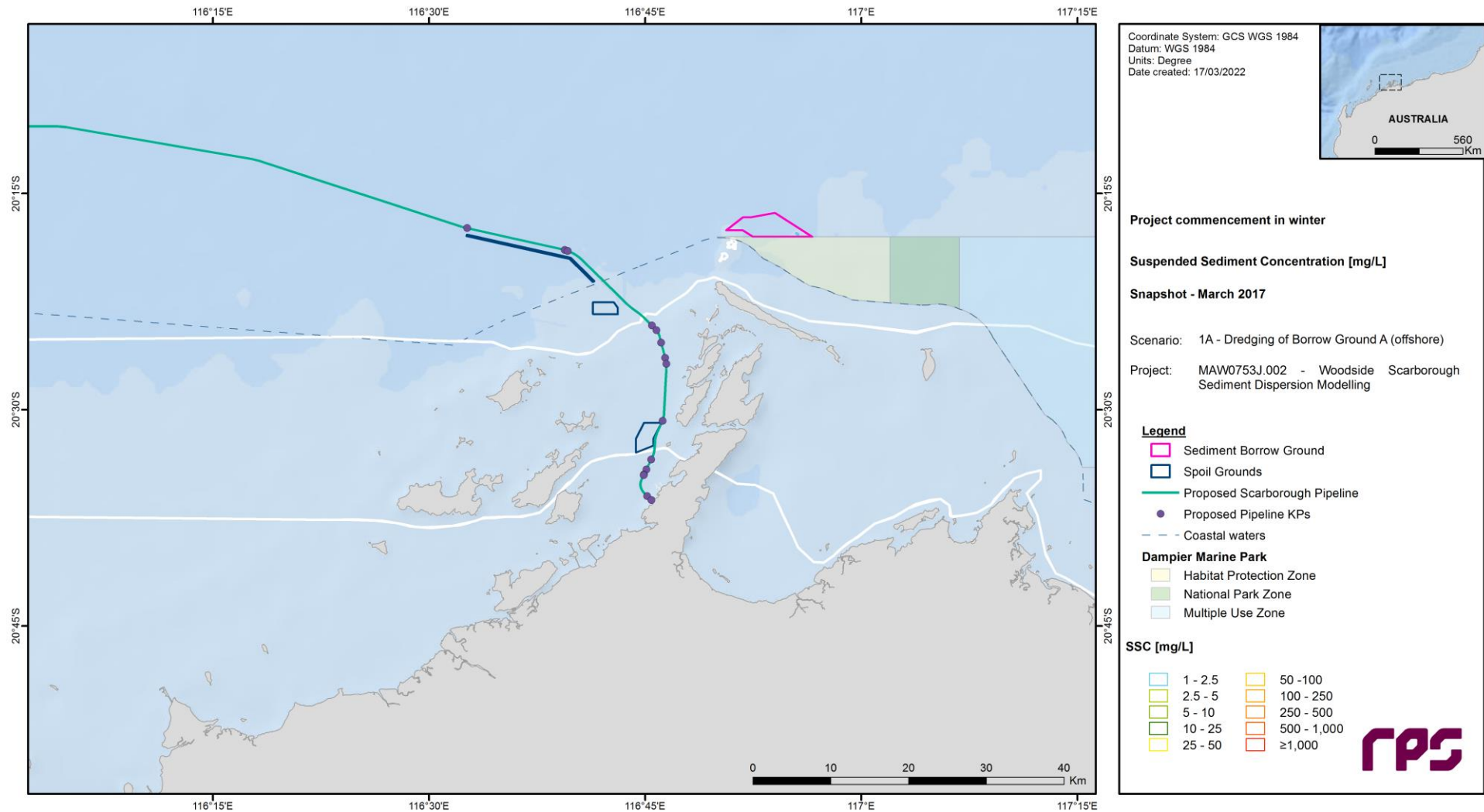


Figure A.9 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> March 2017.



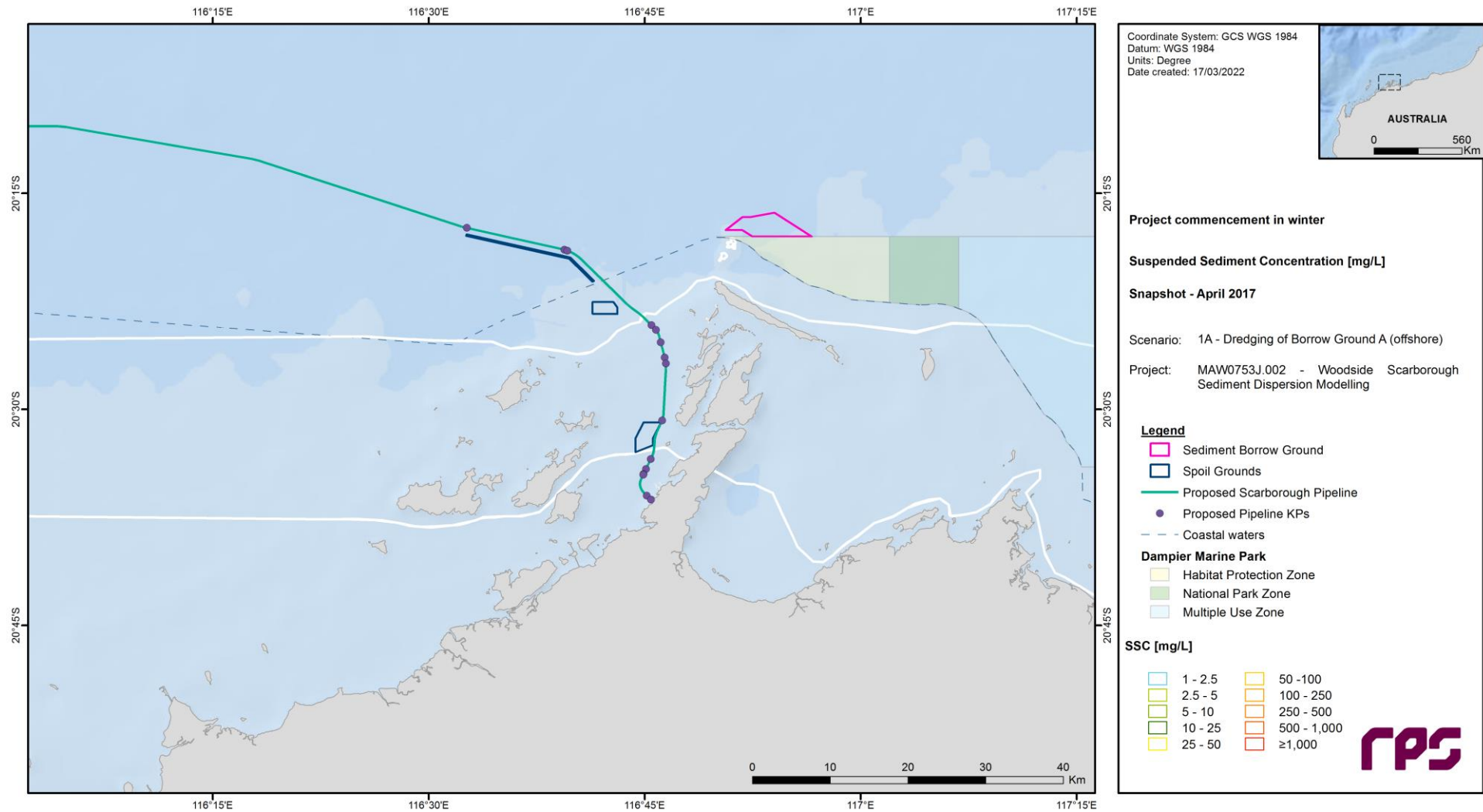


Figure A.10 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> April 2017.

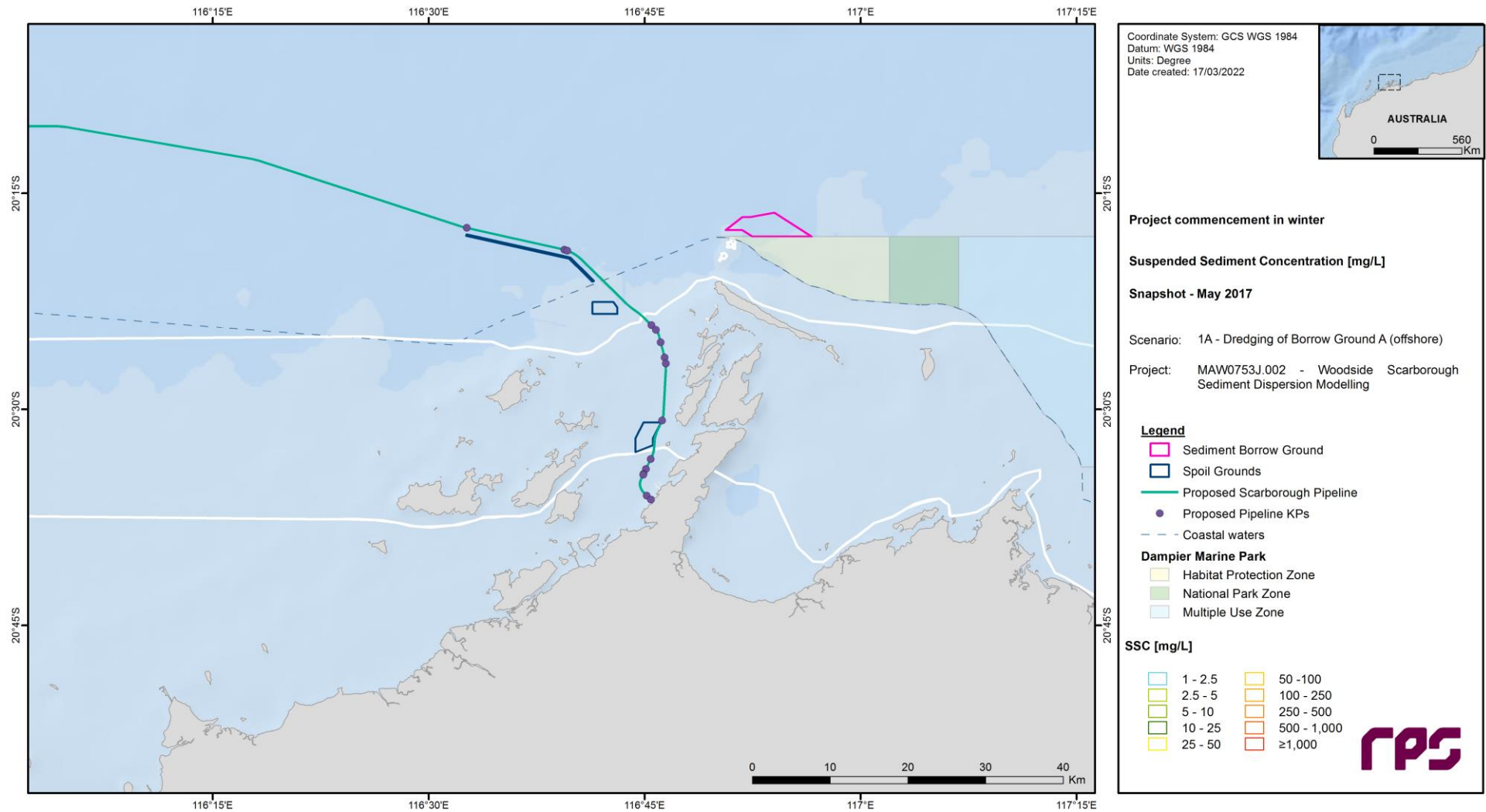


Figure A.11 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> May 2017.

## **A.2 Scenario 2: Dredging Operations Commencing during Summer, with Backfill Material Sourced from Borrow Ground A**

### **A.2.1 Monthly Snapshots**

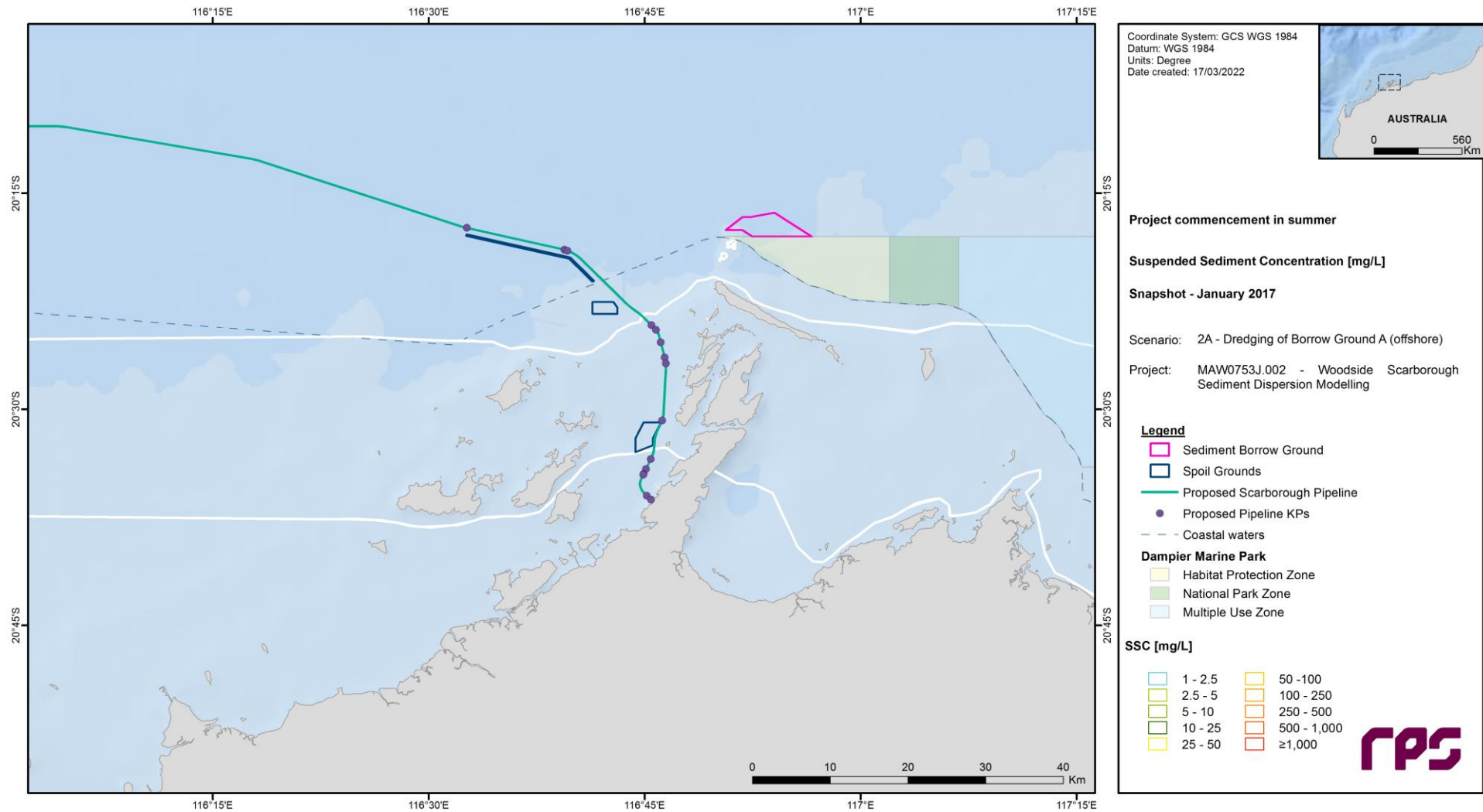


Figure A.12 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> January 2017.

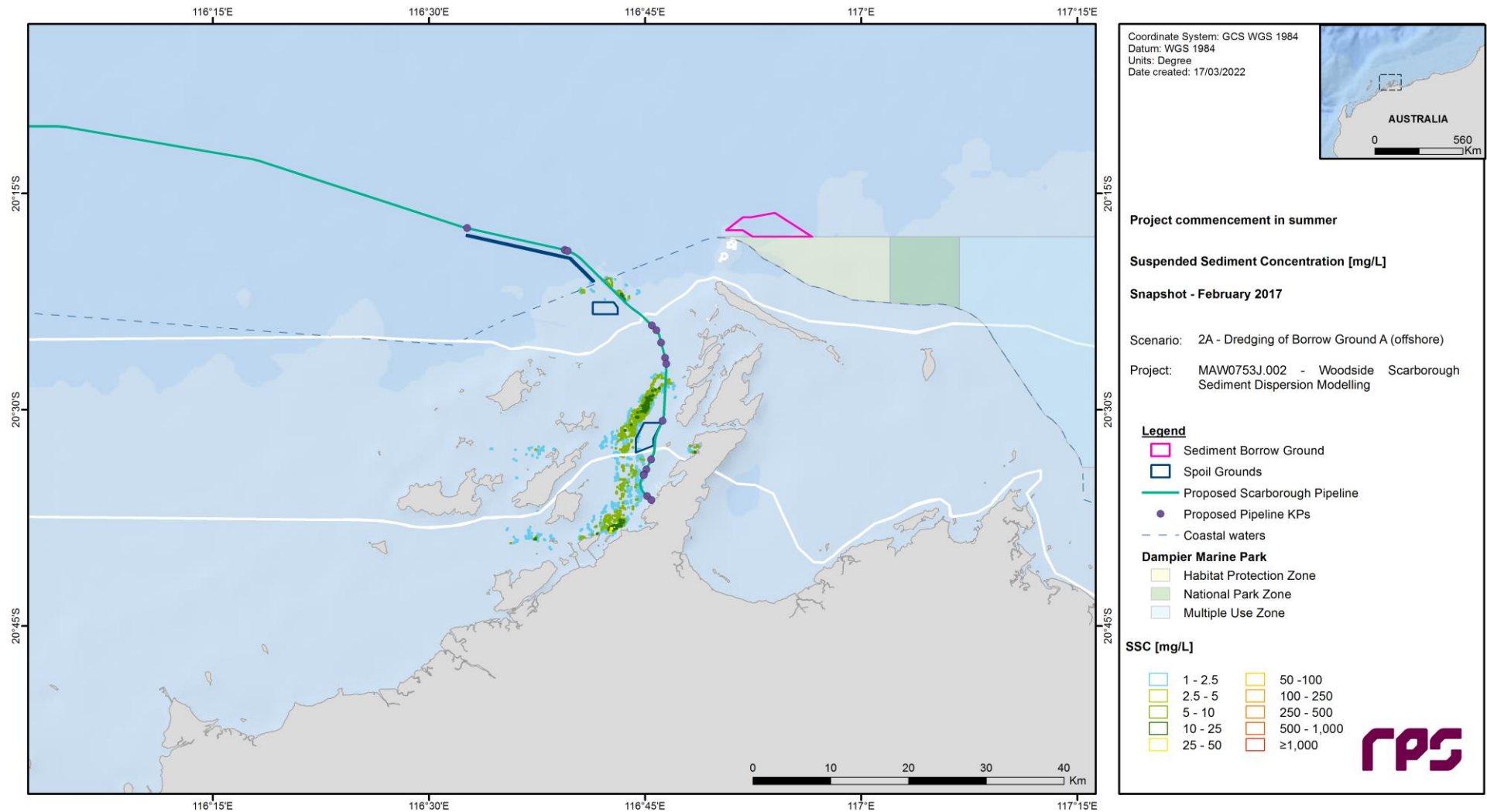


Figure A.13 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> February 2017.

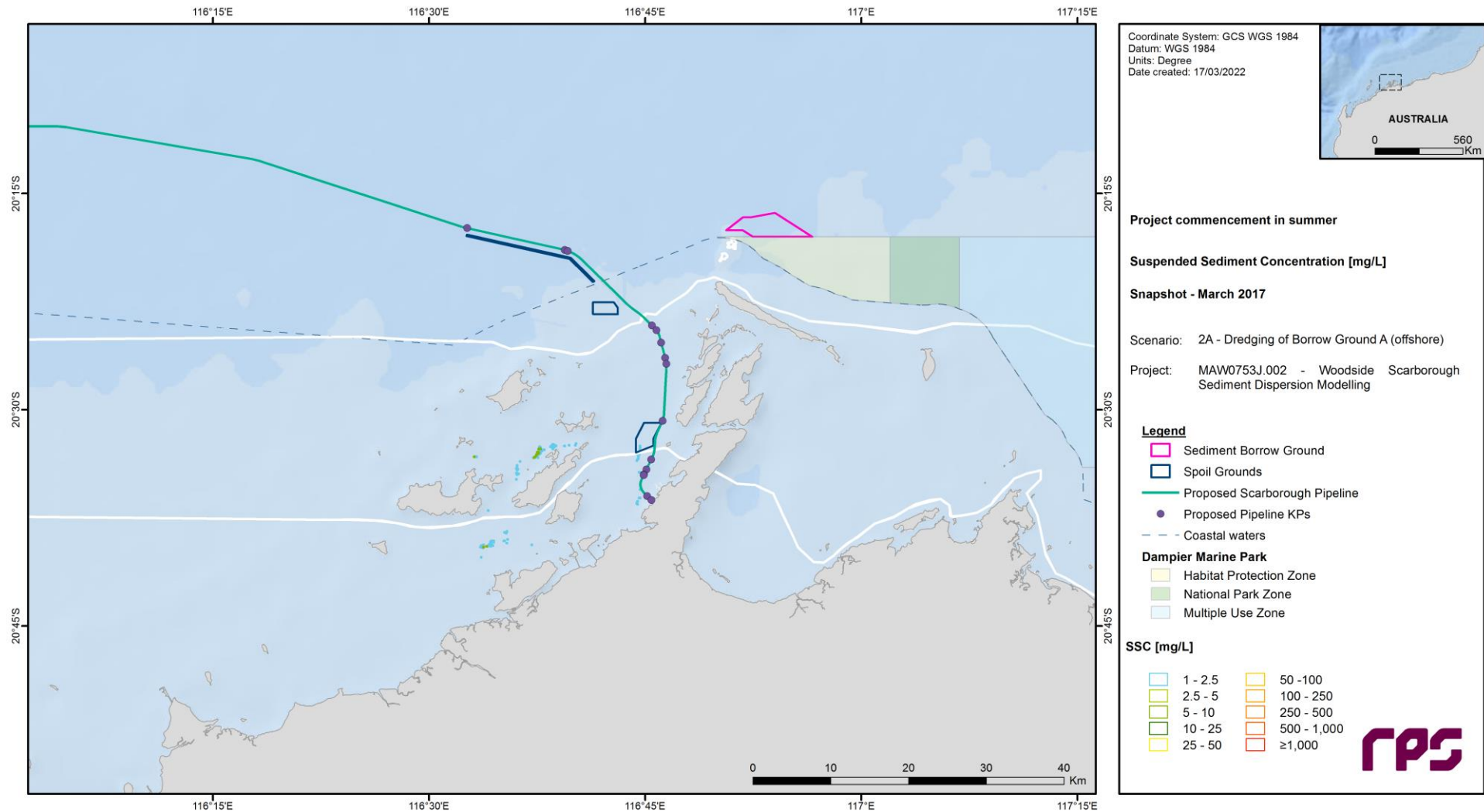


Figure A.14 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> March 2017.



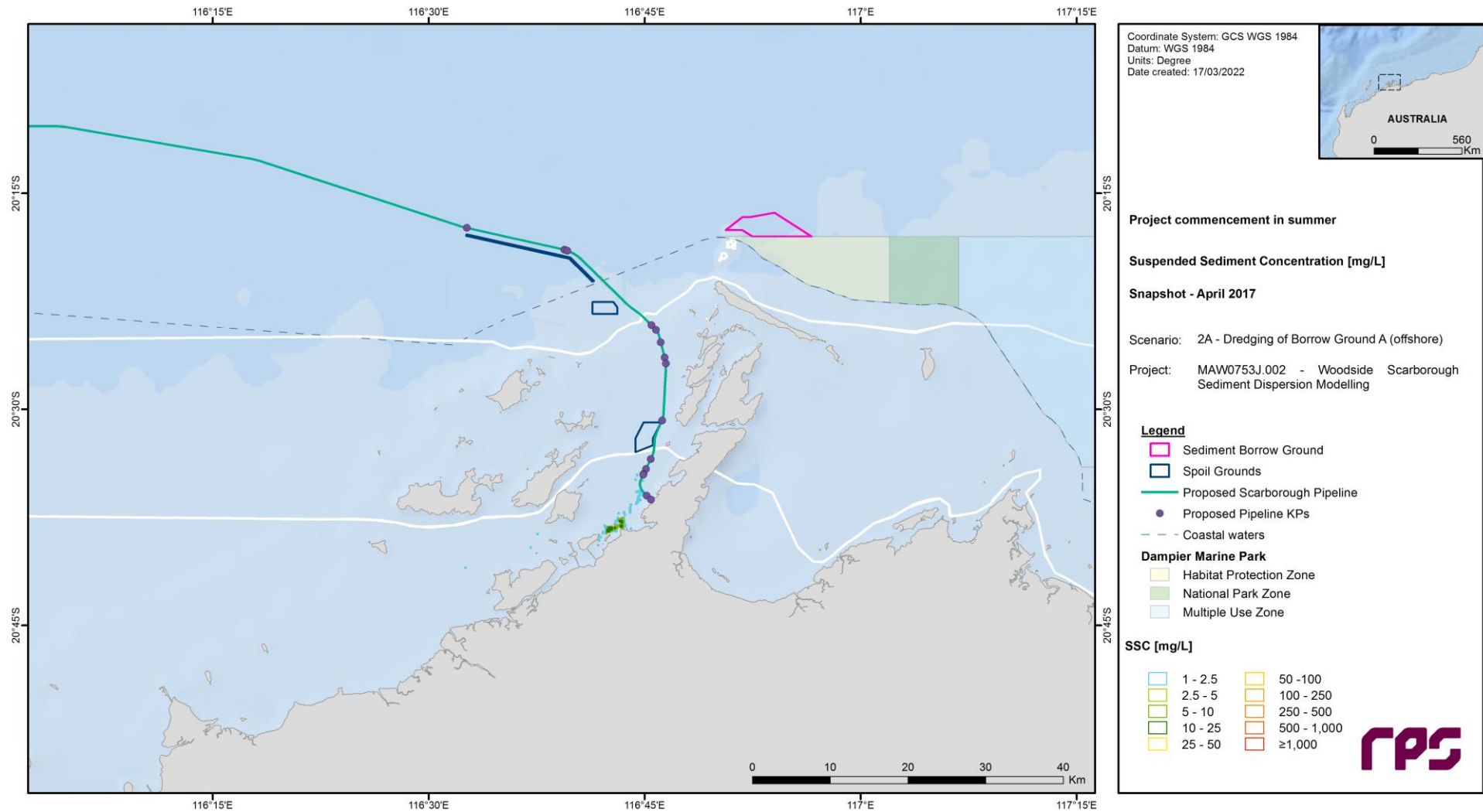


Figure A.15 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> April 2017.



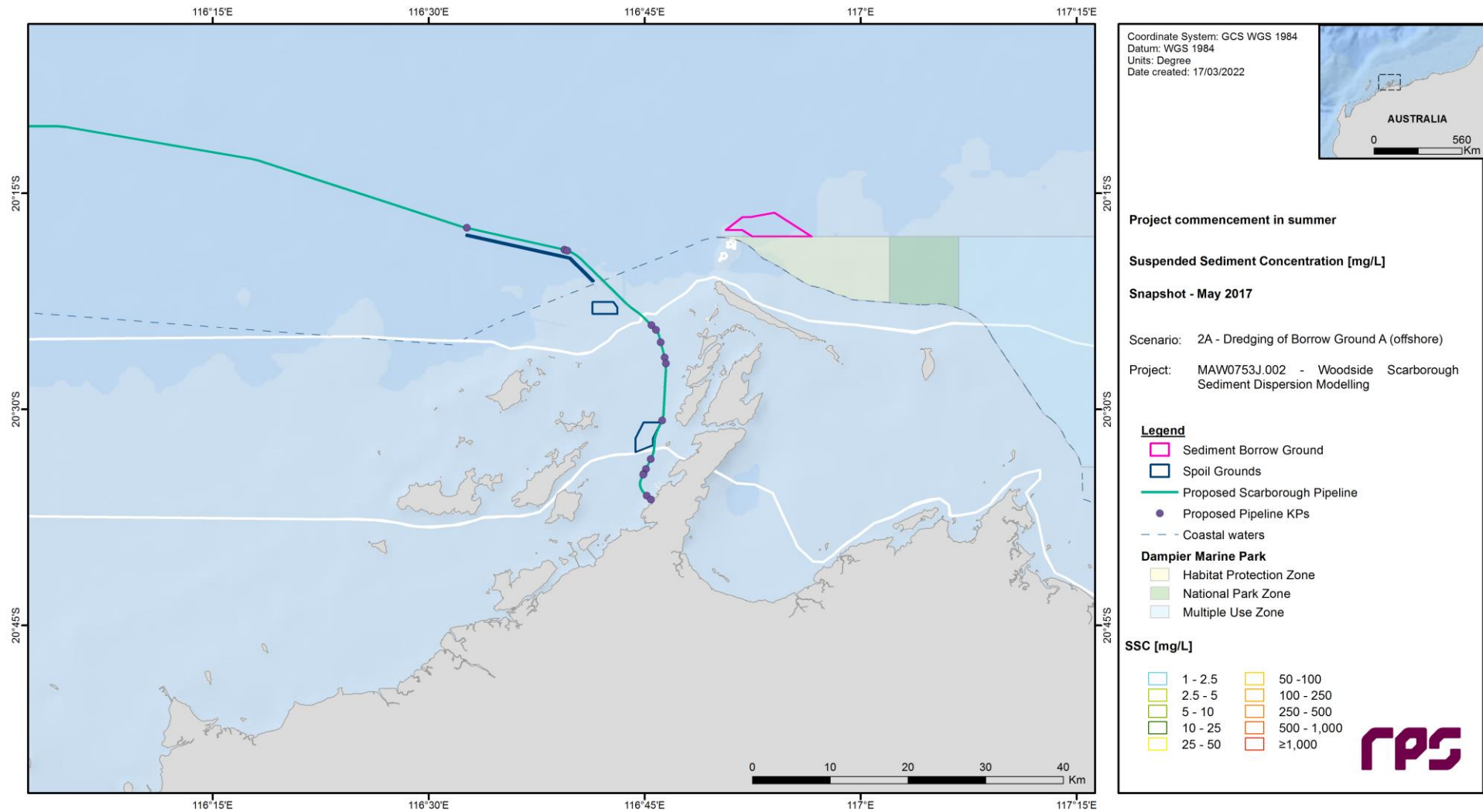


Figure A.16 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> May 2017.

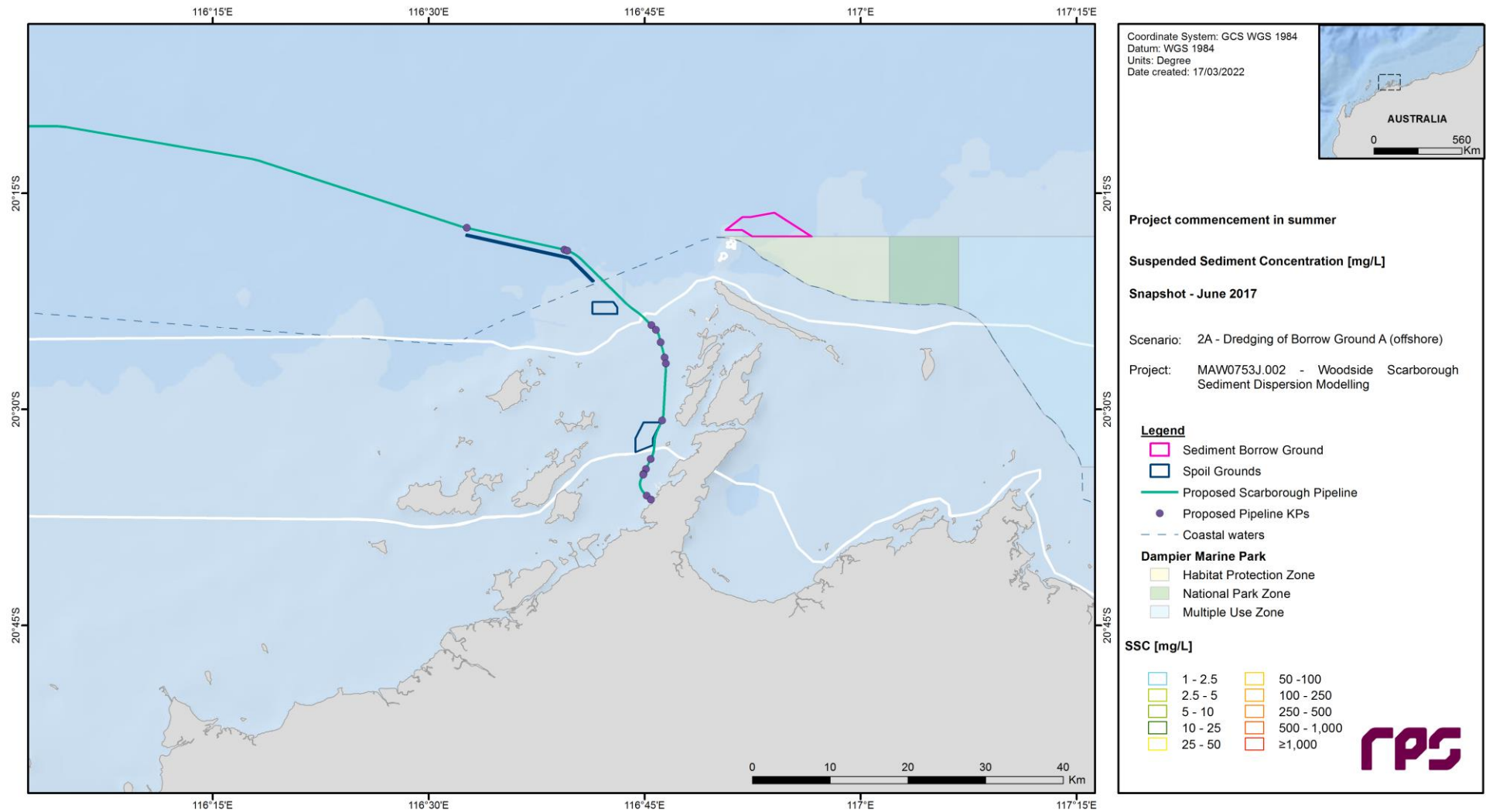


Figure A.17 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> June 2017.

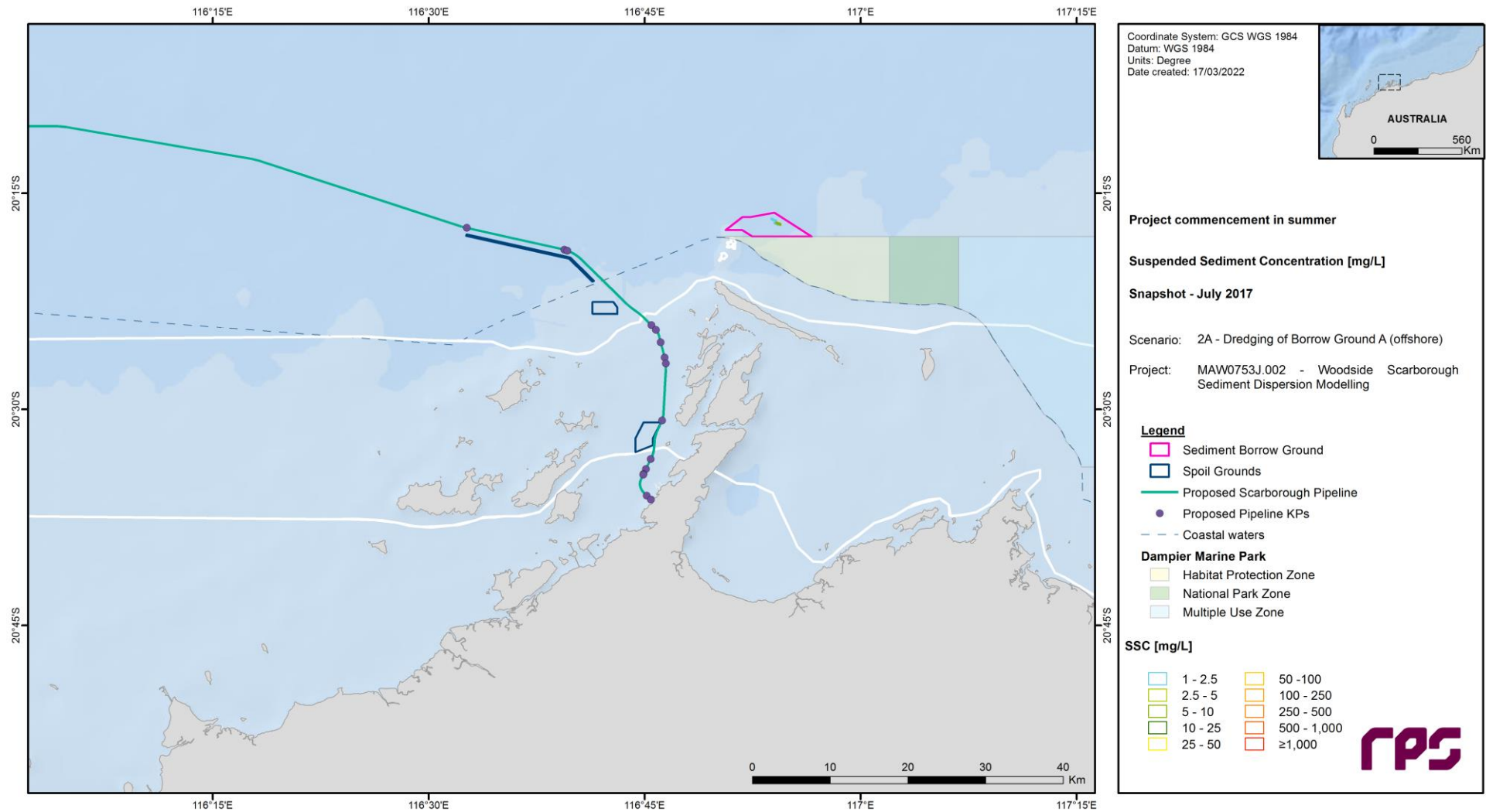


Figure A.18 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> July 2017.

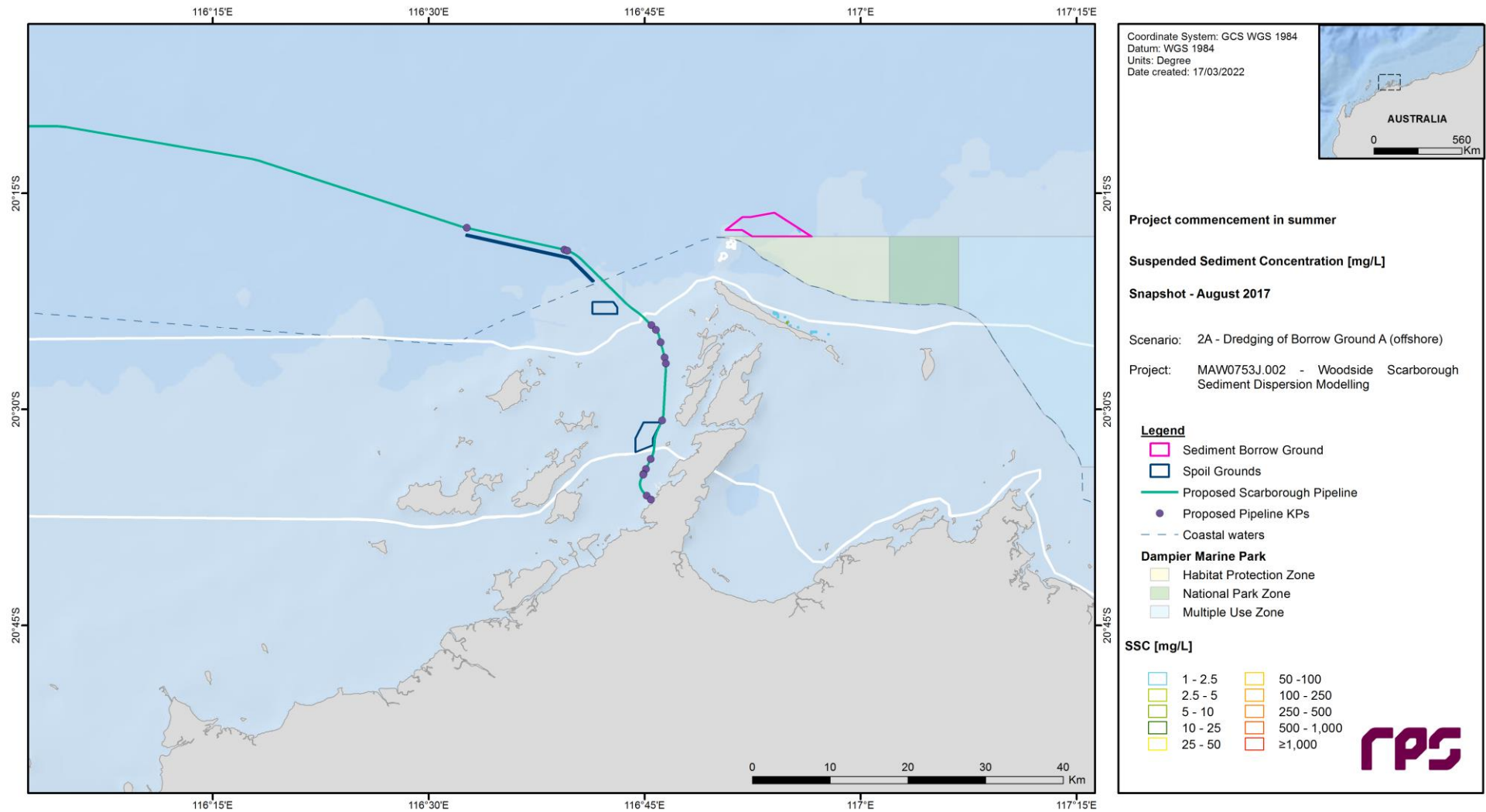


Figure A.19 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> August 2017.

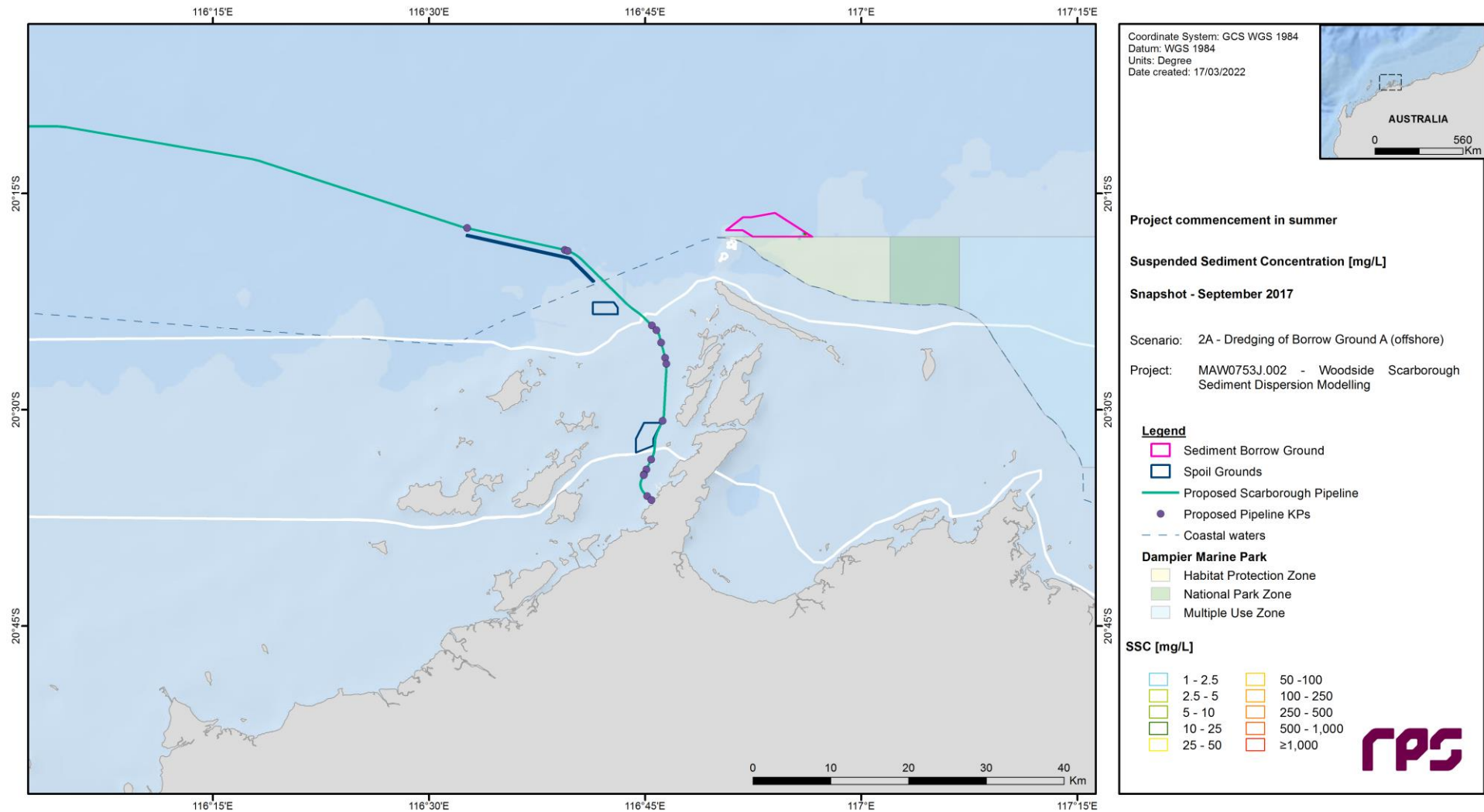


Figure A.20 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> September 2017.



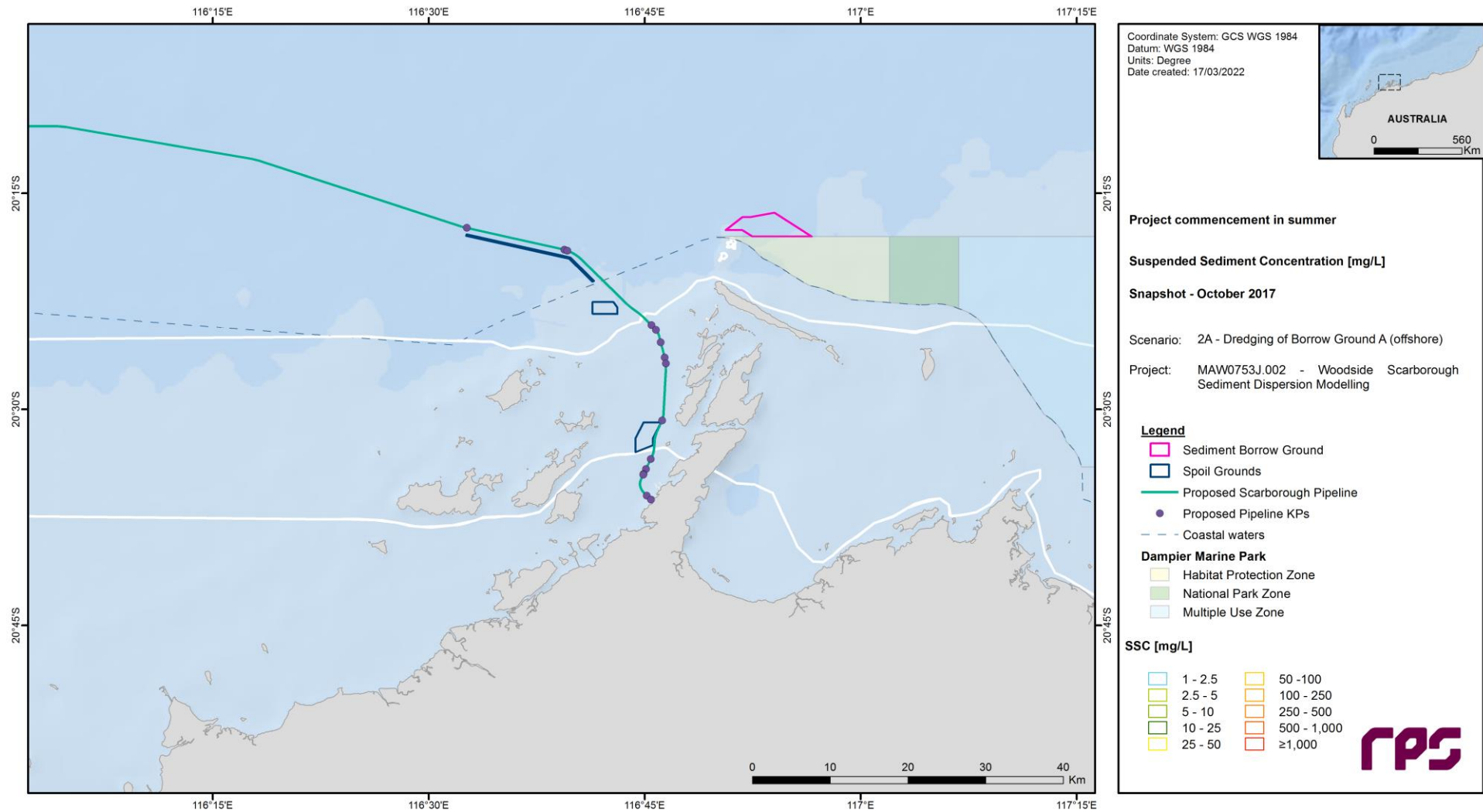


Figure A.21 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> October 2017.

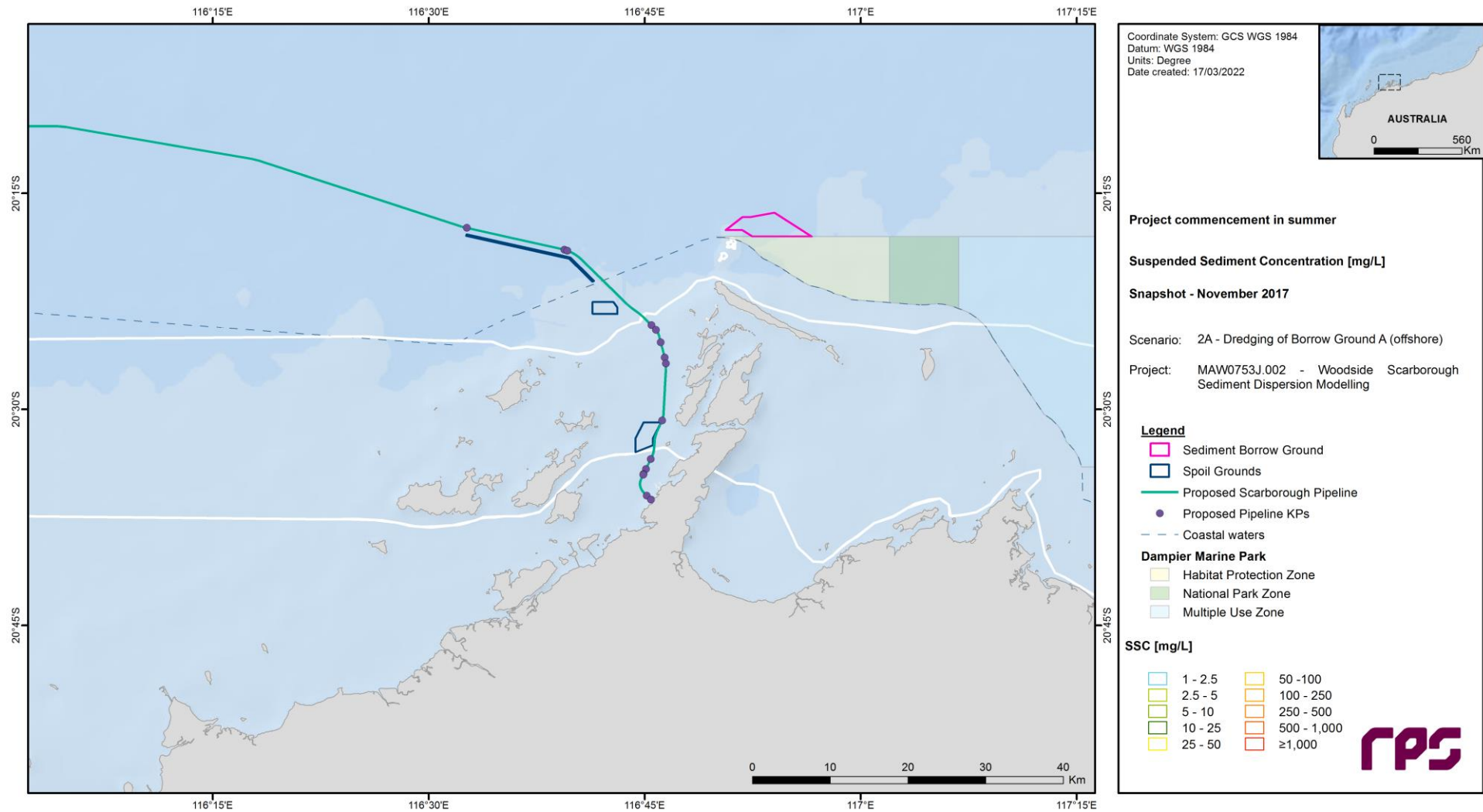


Figure A.22 Predicted instantaneous dredge-excess SSC on 1<sup>st</sup> November 2017.



## Appendix B: Figures of Spatial Outcomes for Activities in Commonwealth Waters

## **B.1 Scenario 1: Project Commencement in Winter – Commonwealth Waters Activities Only**

### **B.1.1 Overall Percentiles**

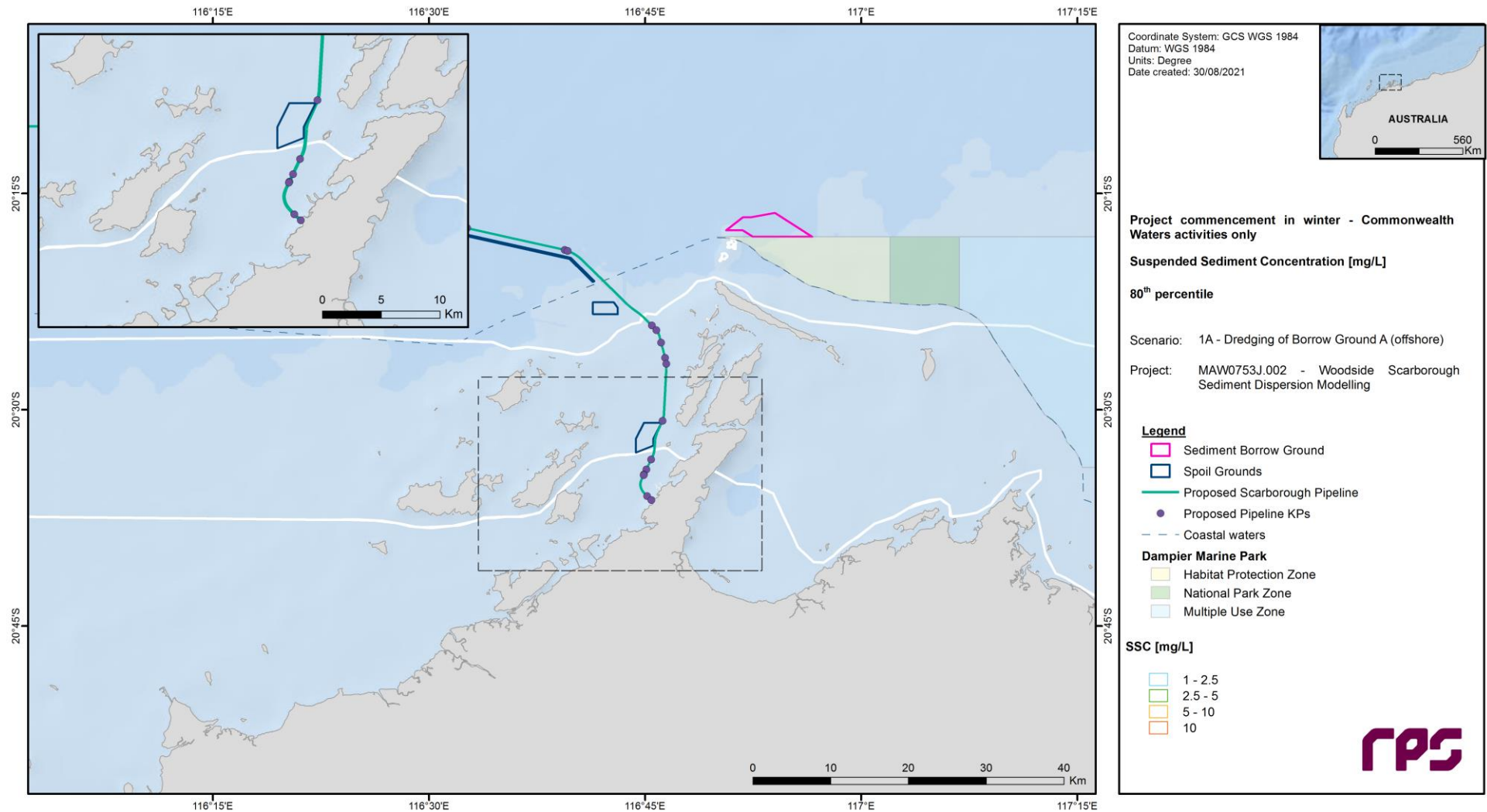


Figure B.23 Predicted 80<sup>th</sup> percentile dredge-excess SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).

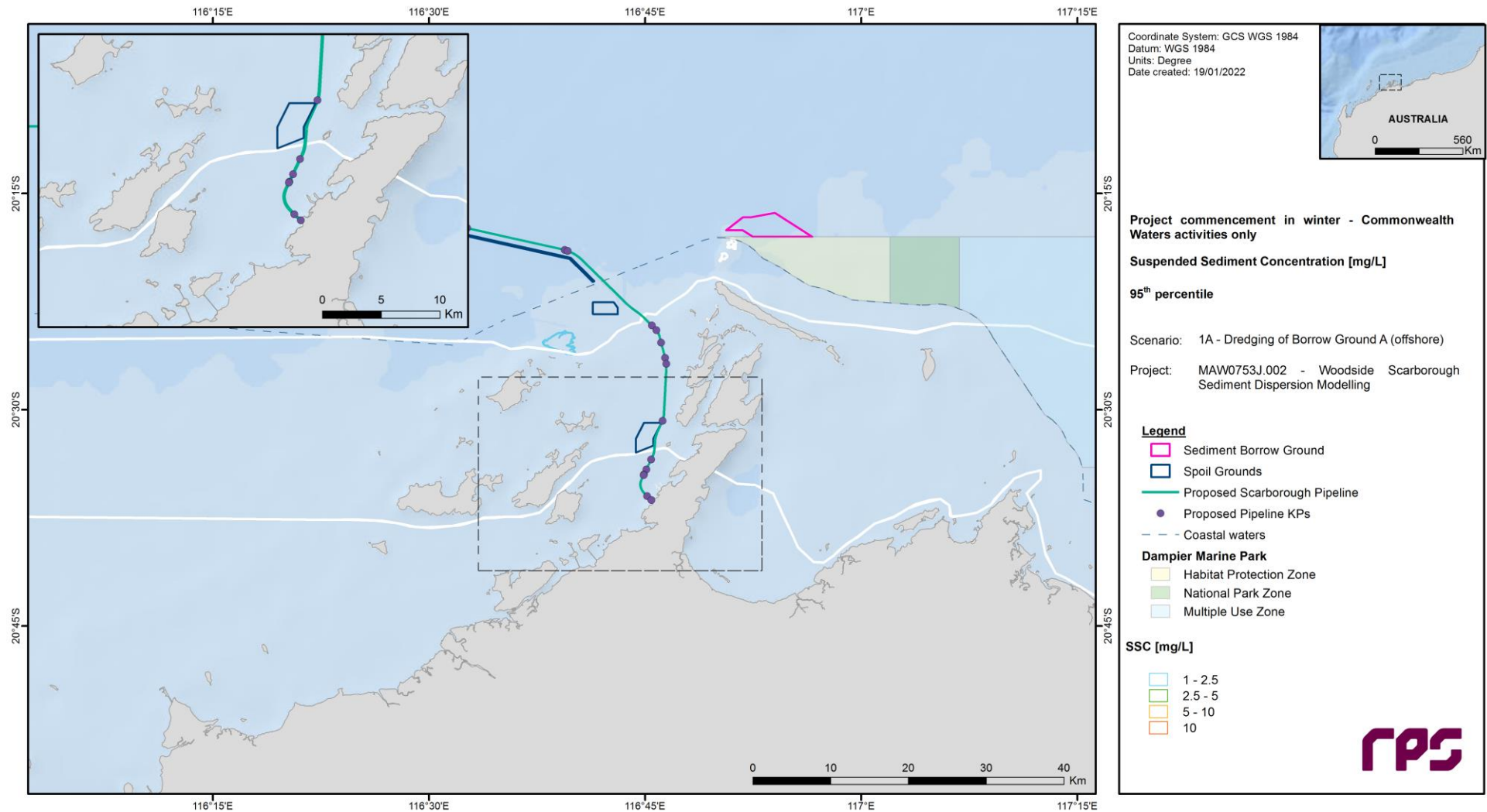
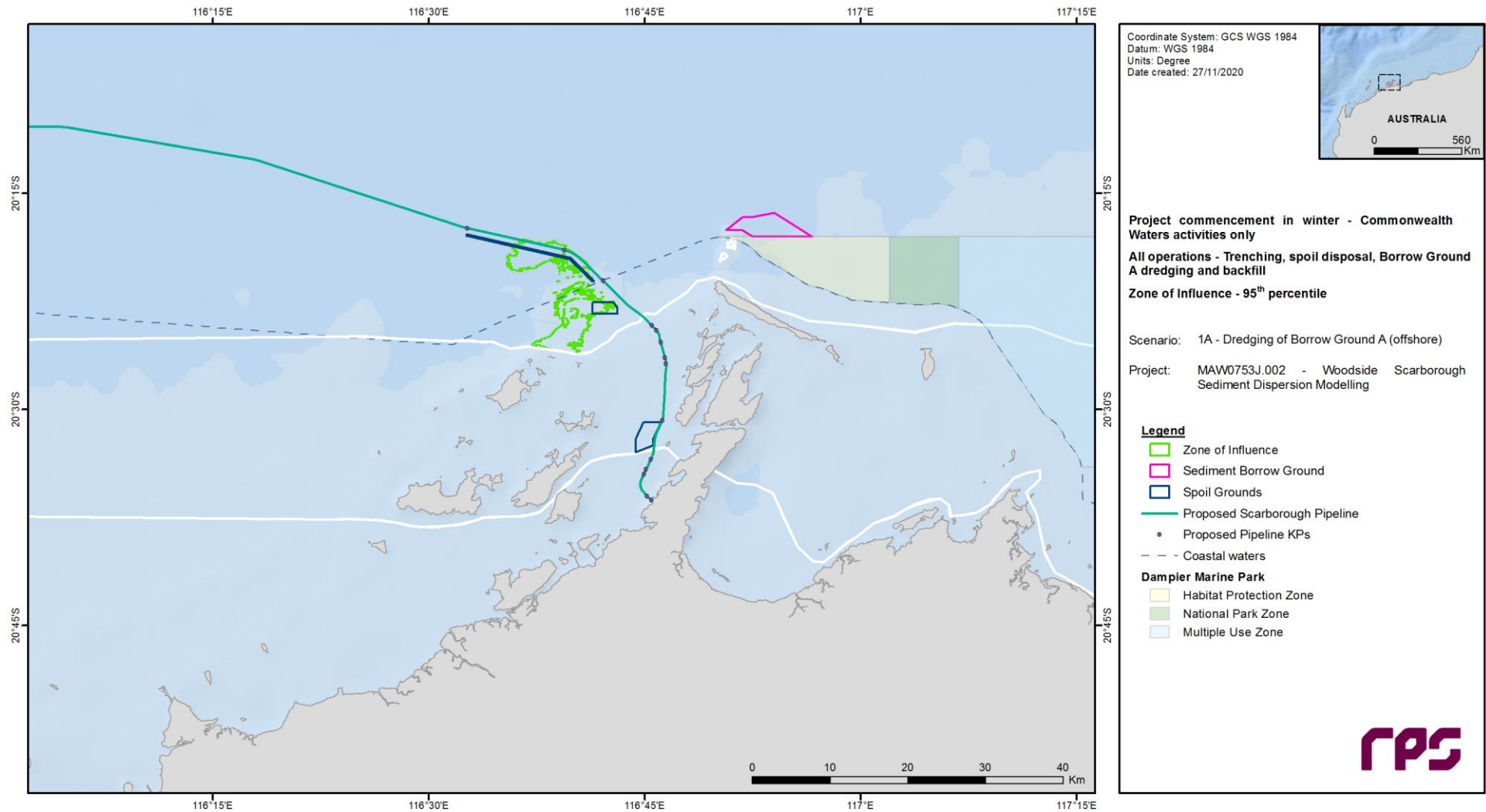


Figure B.24 Predicted 95<sup>th</sup> percentile dredge-excess SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).

## B.1.2 Overall Management Zones



**Figure B.25 Predicted 95<sup>th</sup> percentile Zone of Influence following application of the appropriate spatial thresholds in Table 4.2 to a 24-hour rolling average of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).**

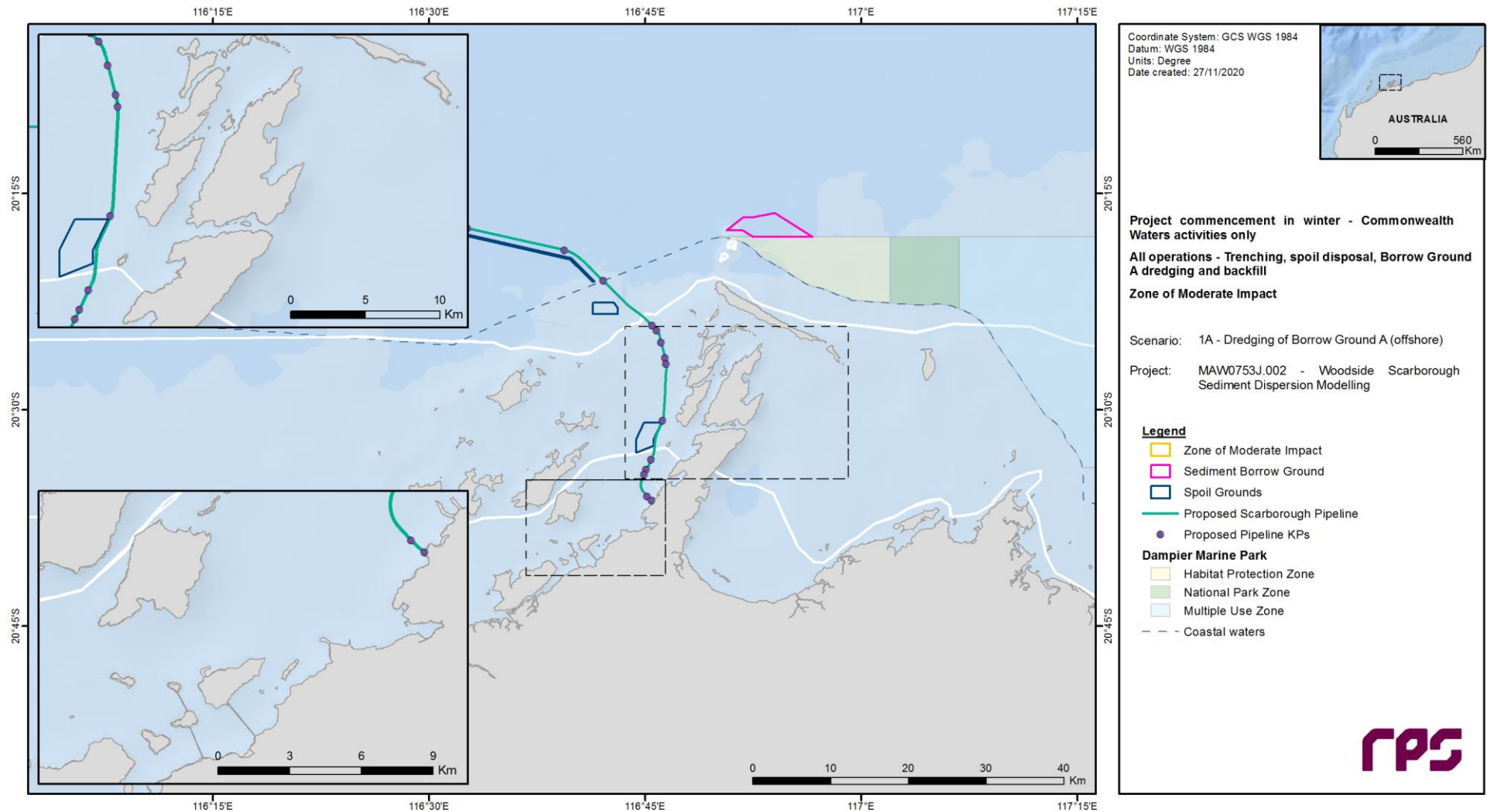


Figure B.26 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 3-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).



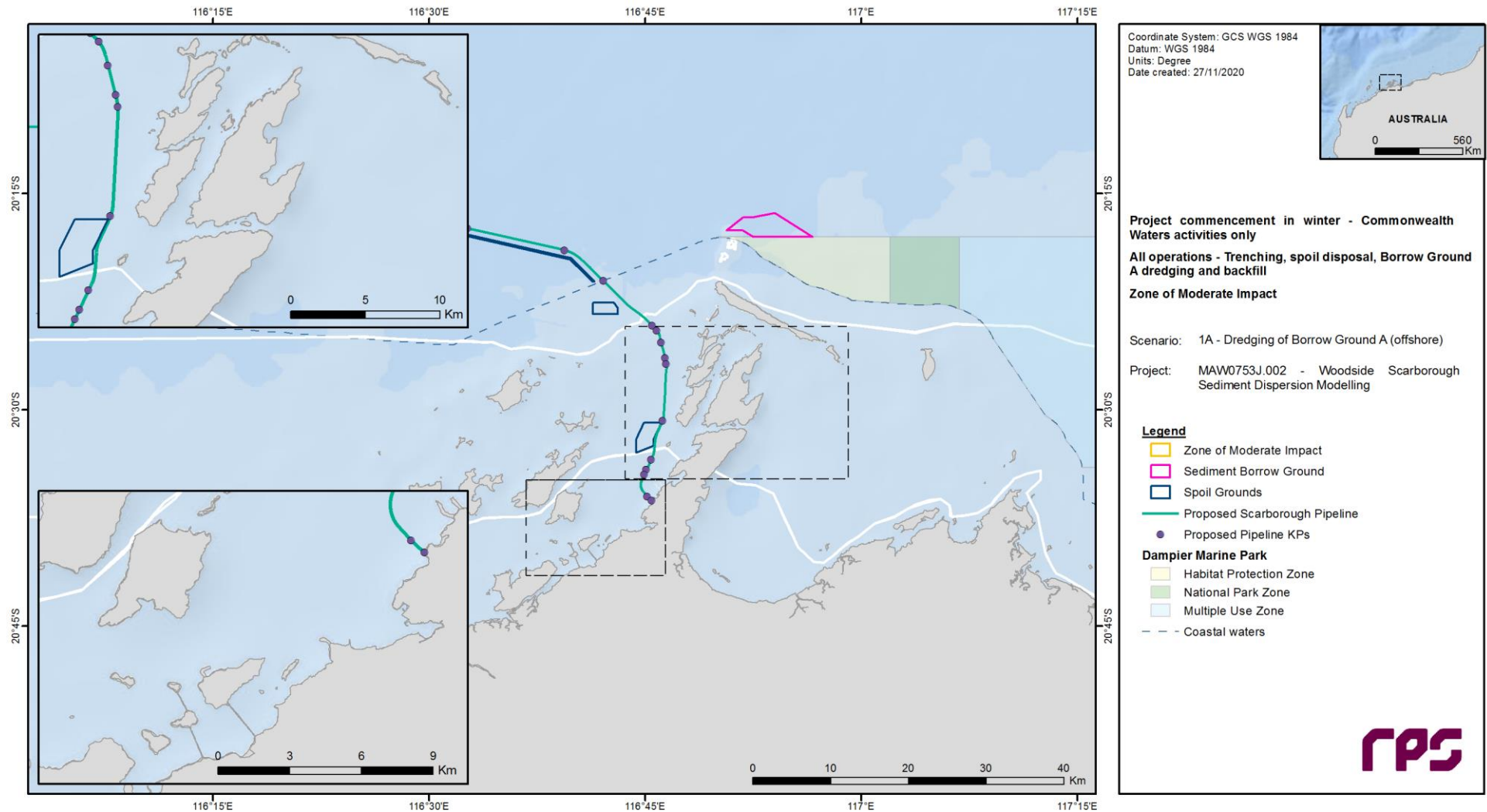
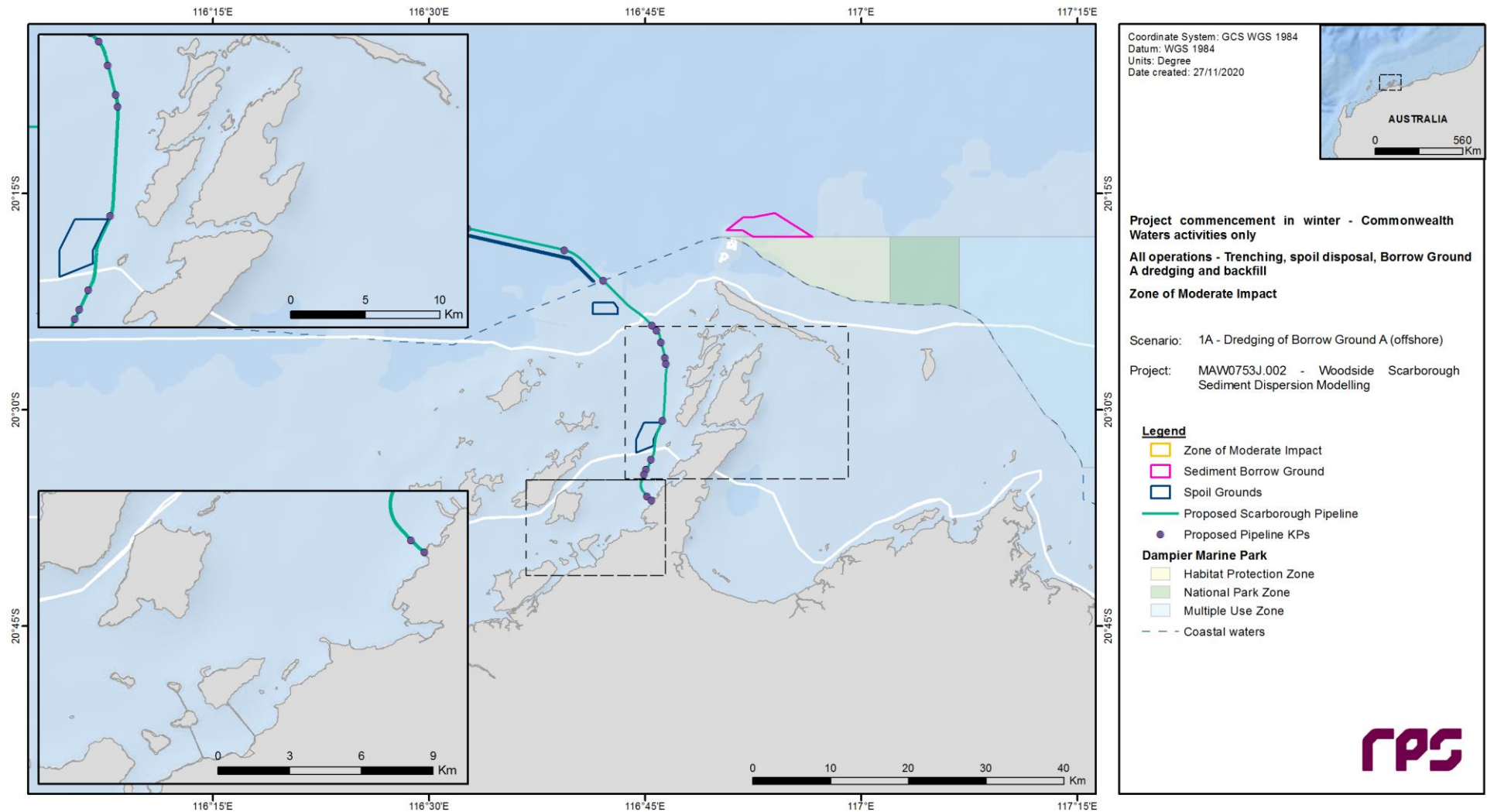


Figure B.27 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 7-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).



**Figure B.28 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 10-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).**

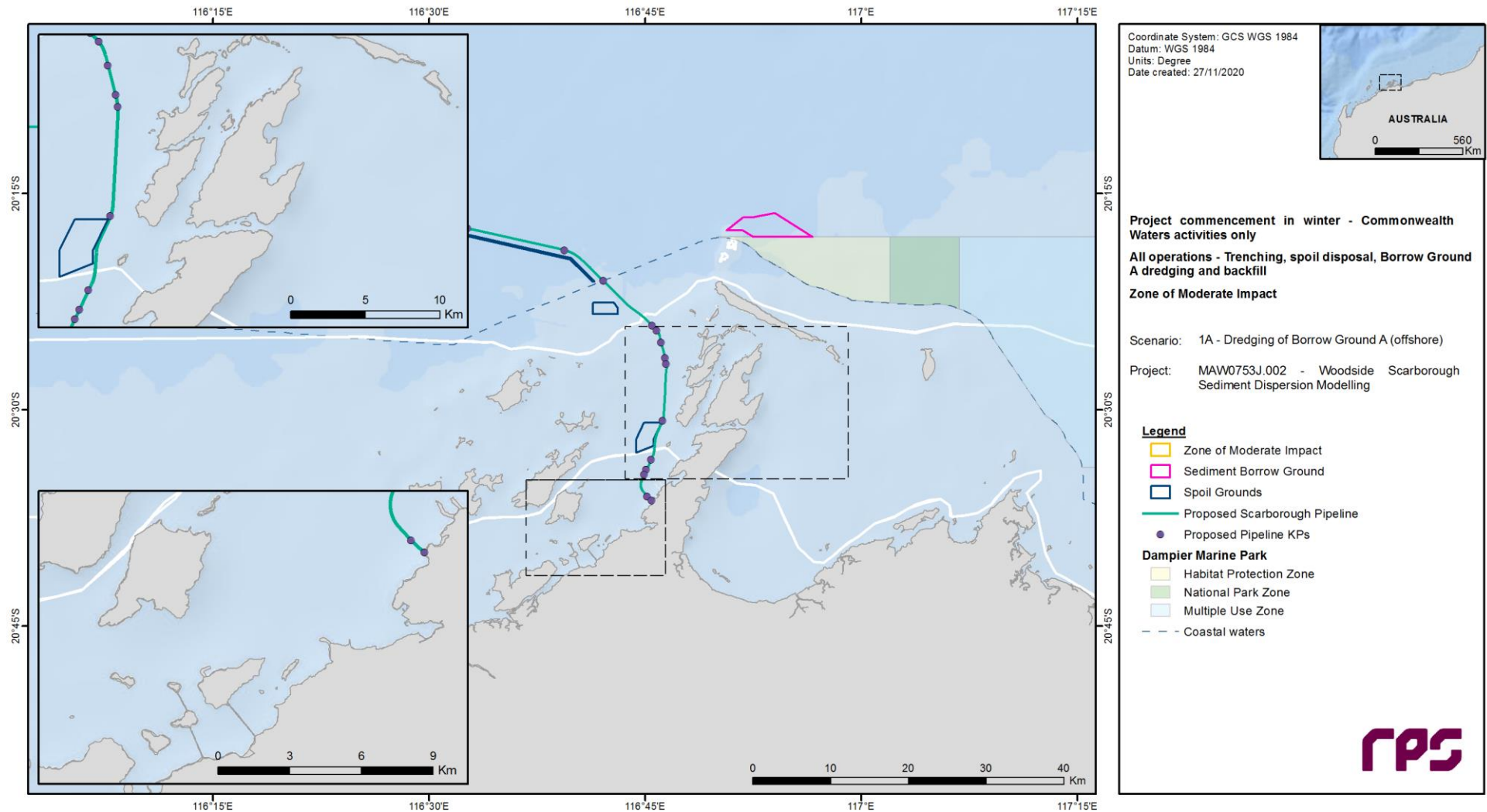


Figure B.29 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 14-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).

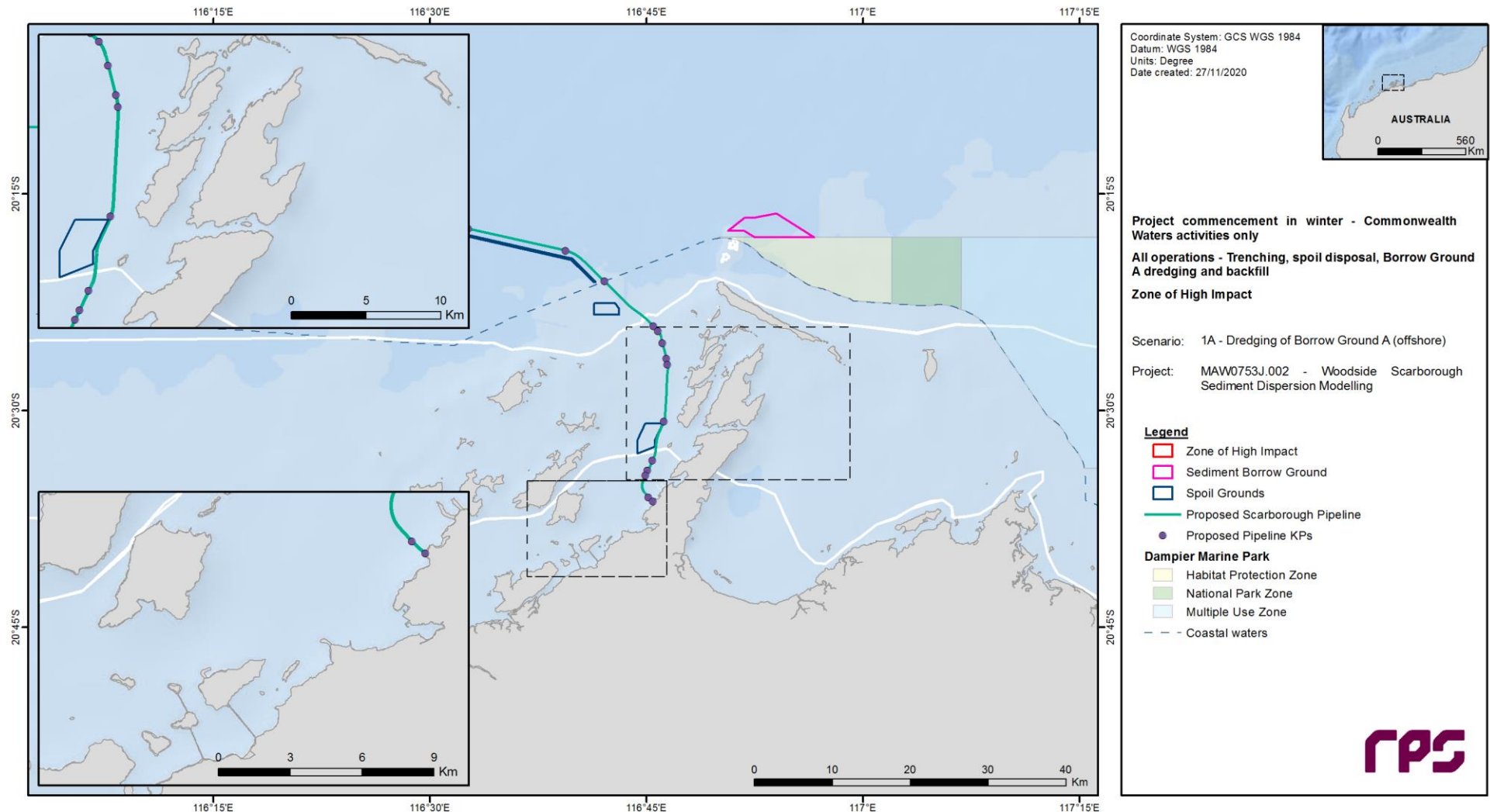


Figure B.30 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 3-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).



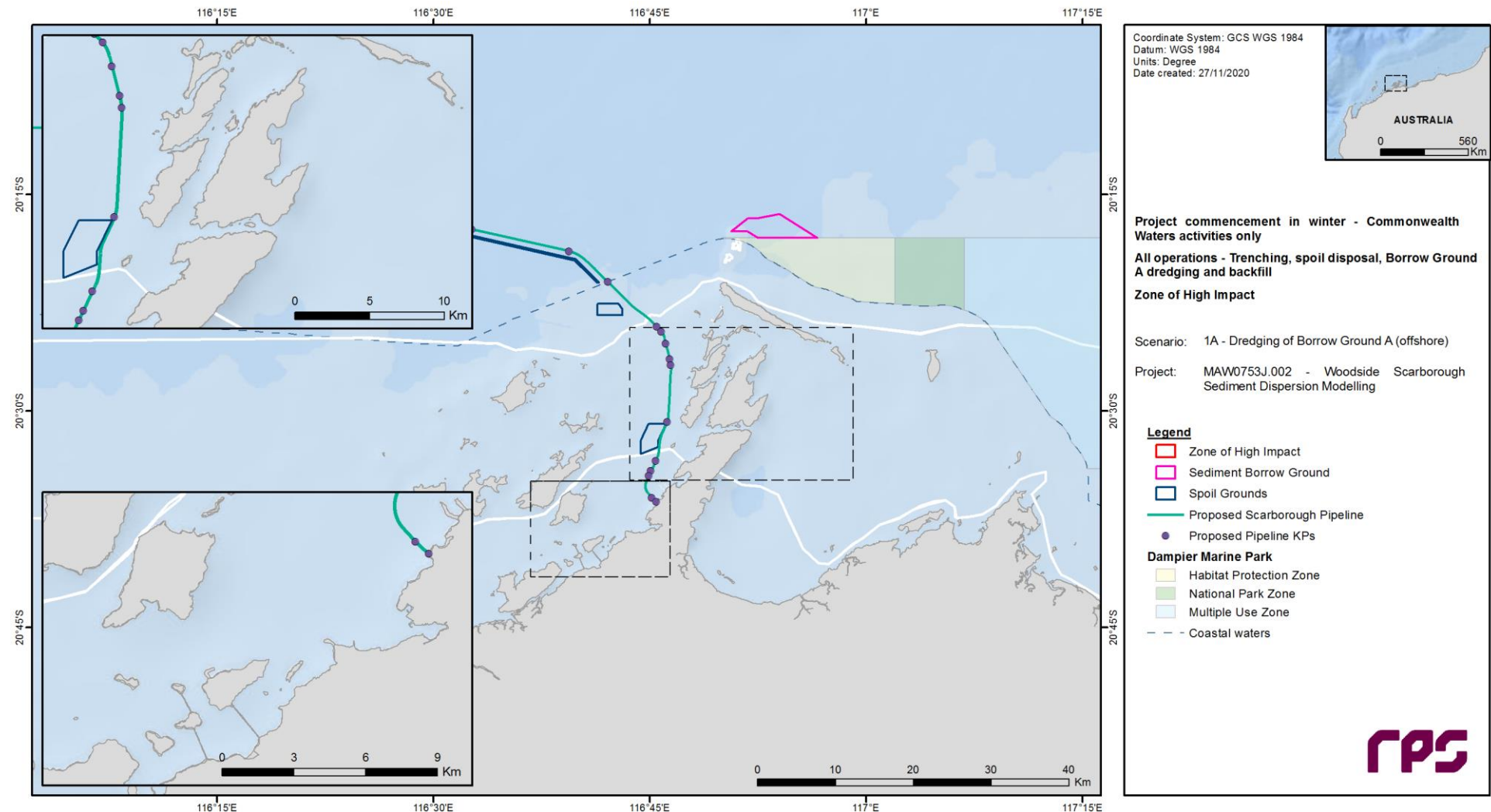


Figure B.31 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 7-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).

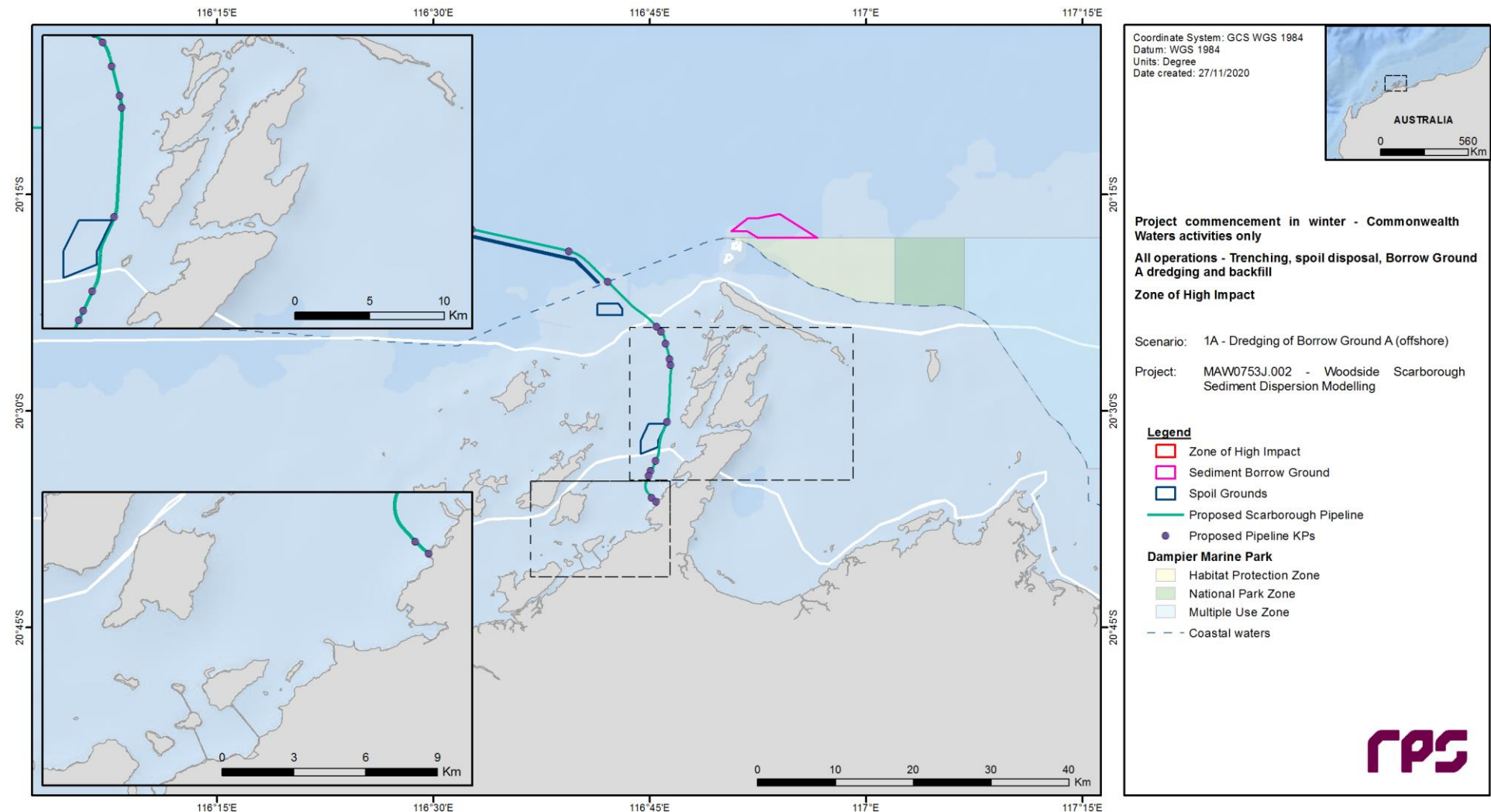


Figure B.32 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 10-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).

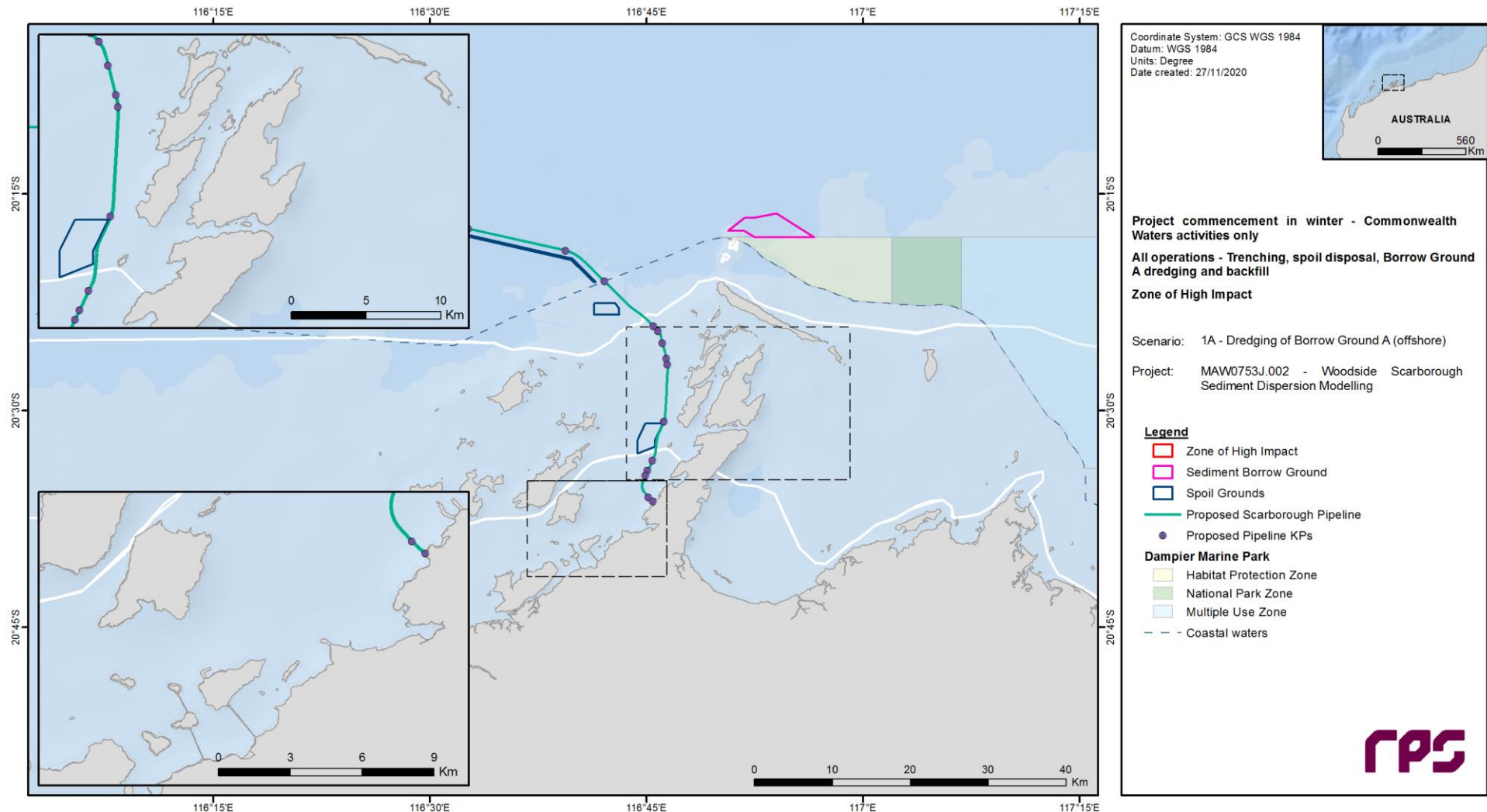


Figure B.33 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 14-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> August 2016 to 23<sup>rd</sup> May 2017).



## **B.2 Scenario 2: Project Commencement in Summer – Commonwealth Waters Activities Only**

### **B.2.1 Overall Percentiles**

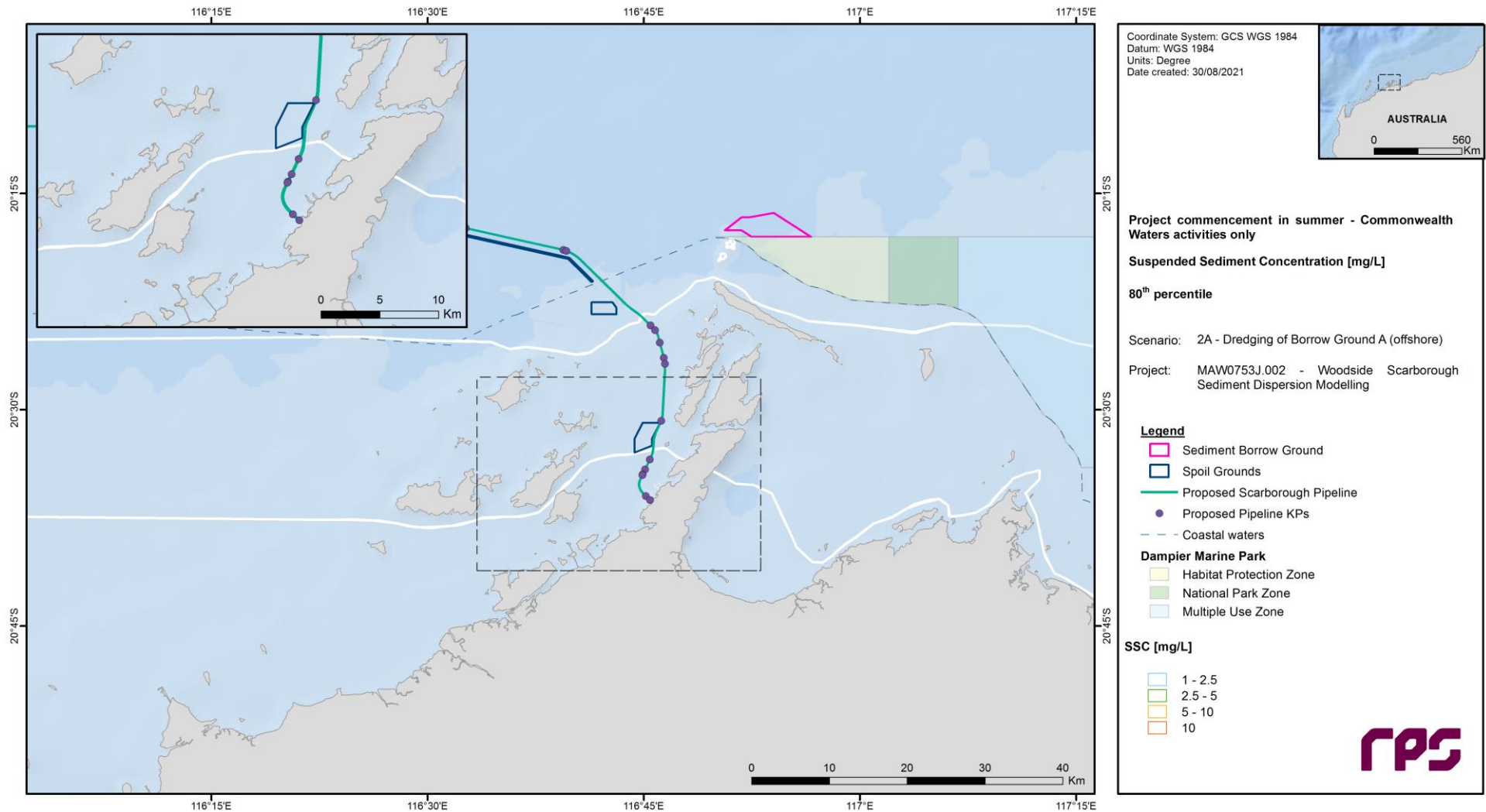


Figure B.34 Predicted 80<sup>th</sup> percentile dredge-excess SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).

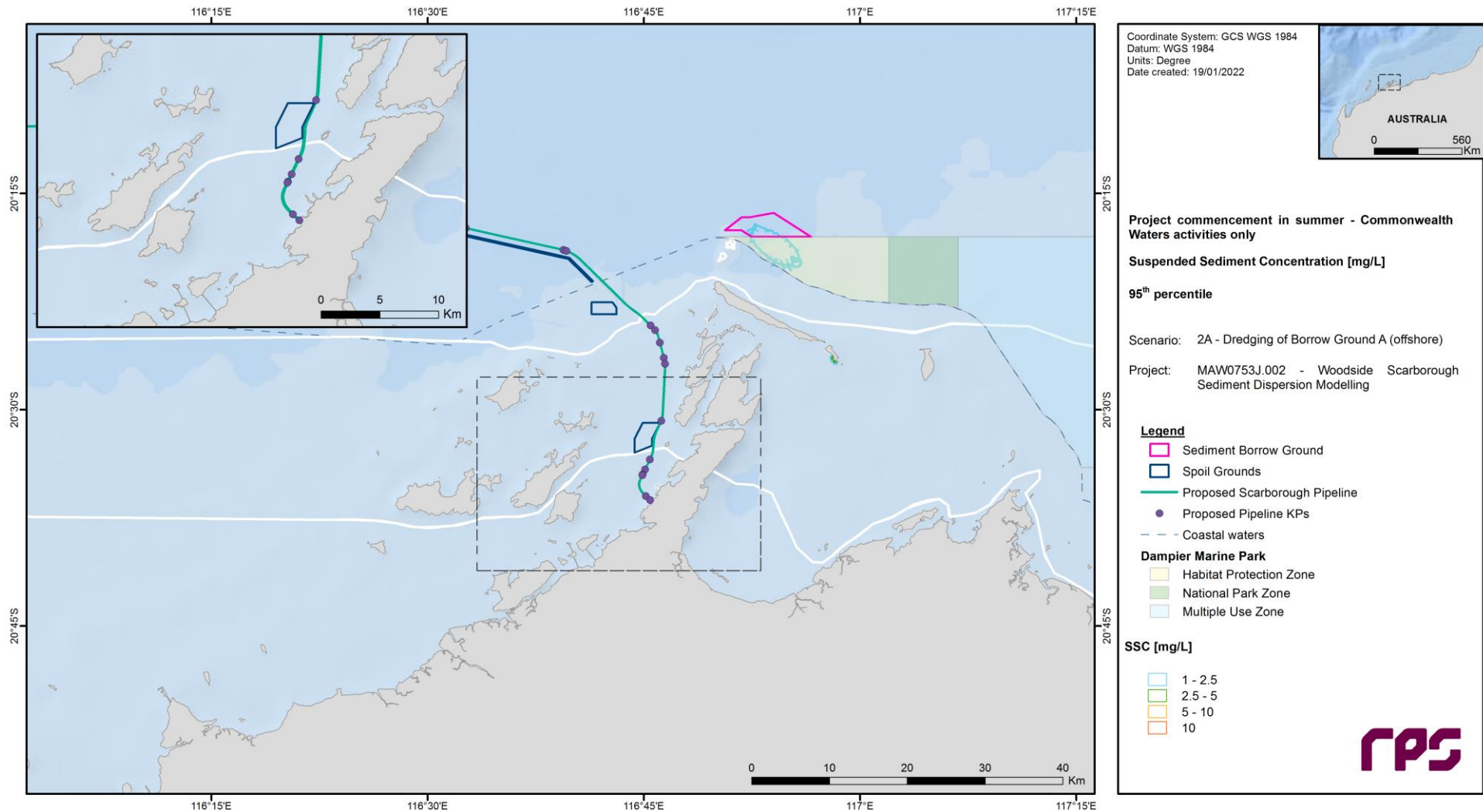


Figure B.35 Predicted 95<sup>th</sup> percentile dredge-excess SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).

## B.2.2 Overall Management Zones

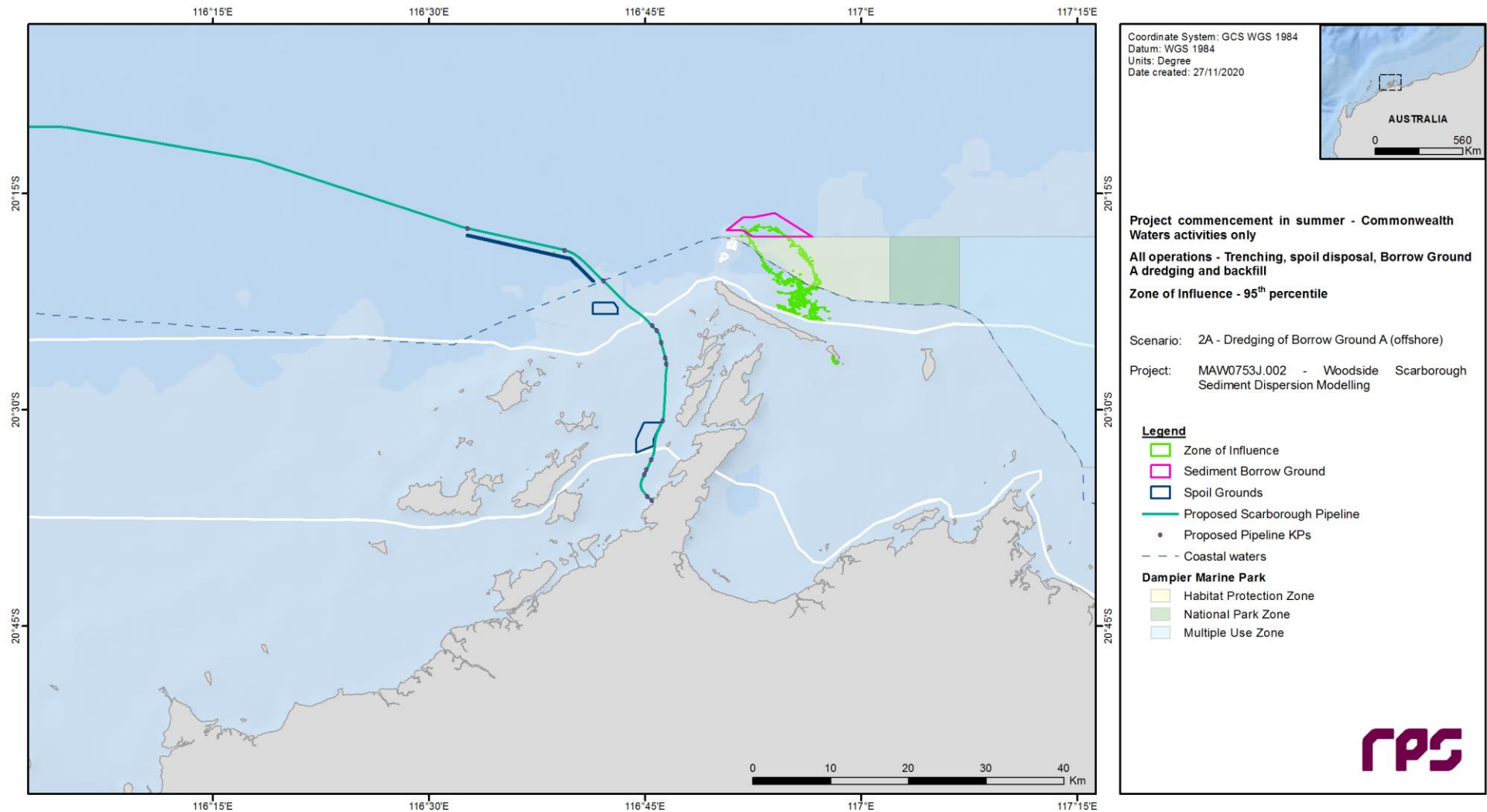


Figure B.36 Predicted 95<sup>th</sup> percentile Zone of Influence following application of the appropriate spatial thresholds in Table 4.2 to a 24-hour rolling average of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).

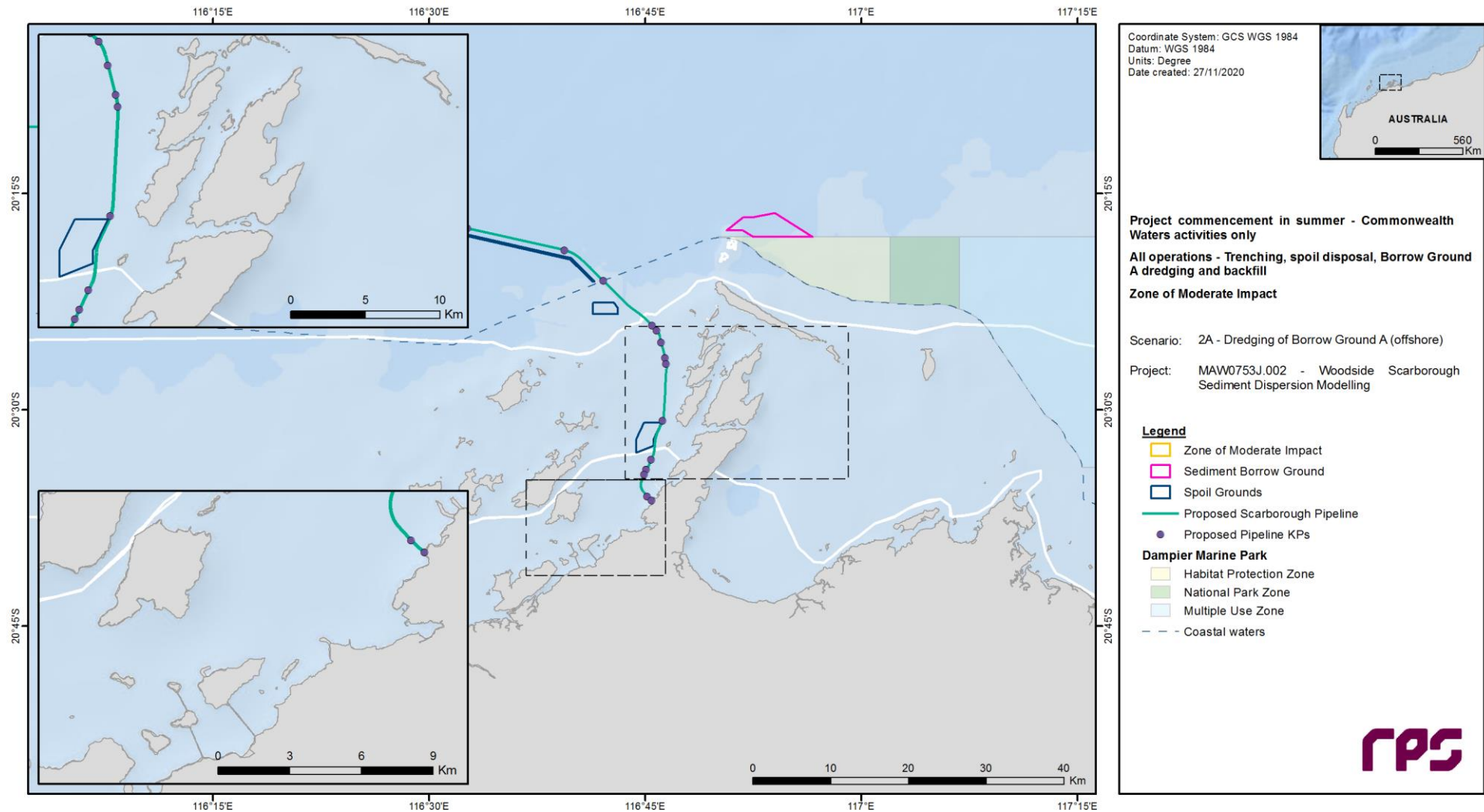


Figure B.37 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 3-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).



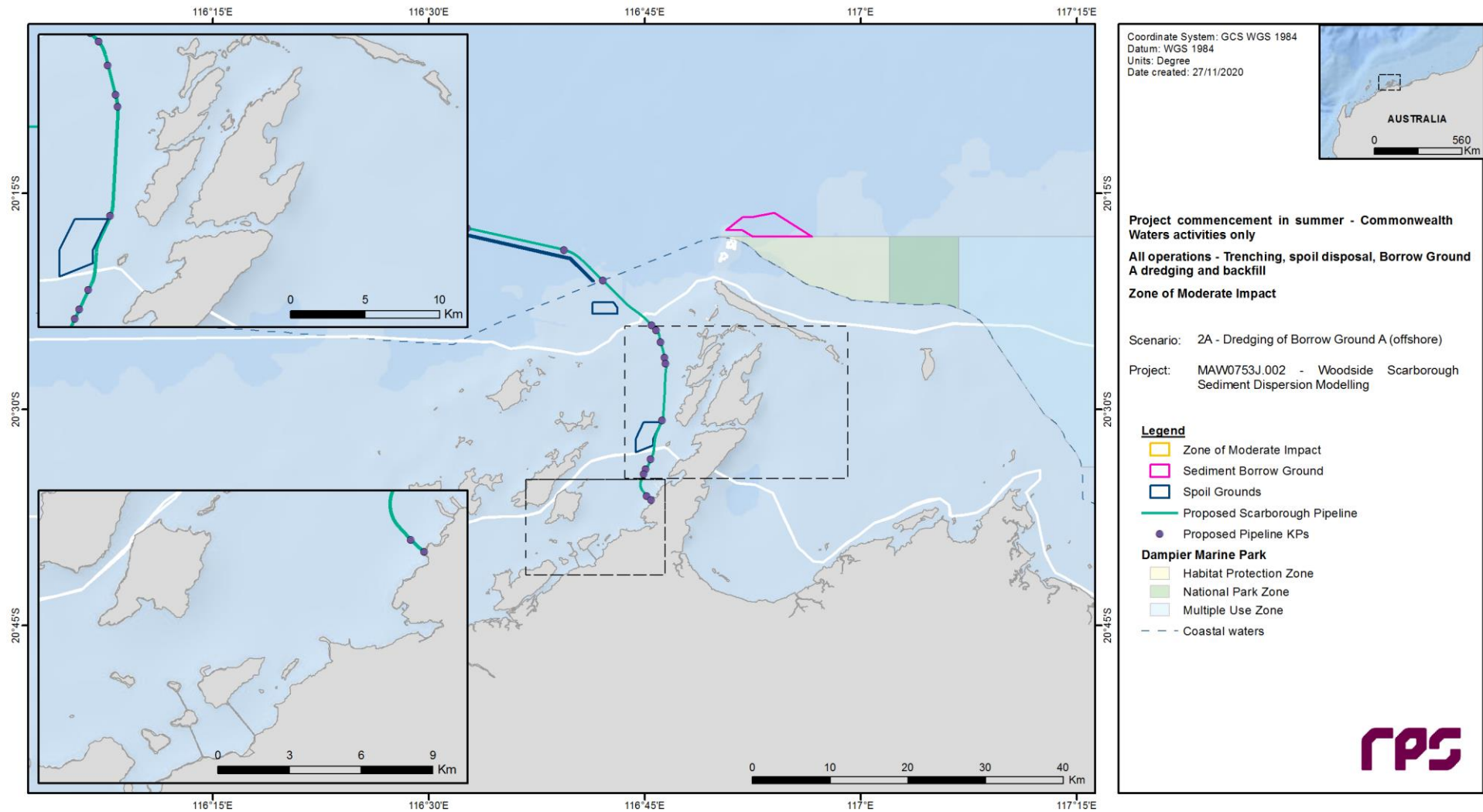


Figure B.38 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 7-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).



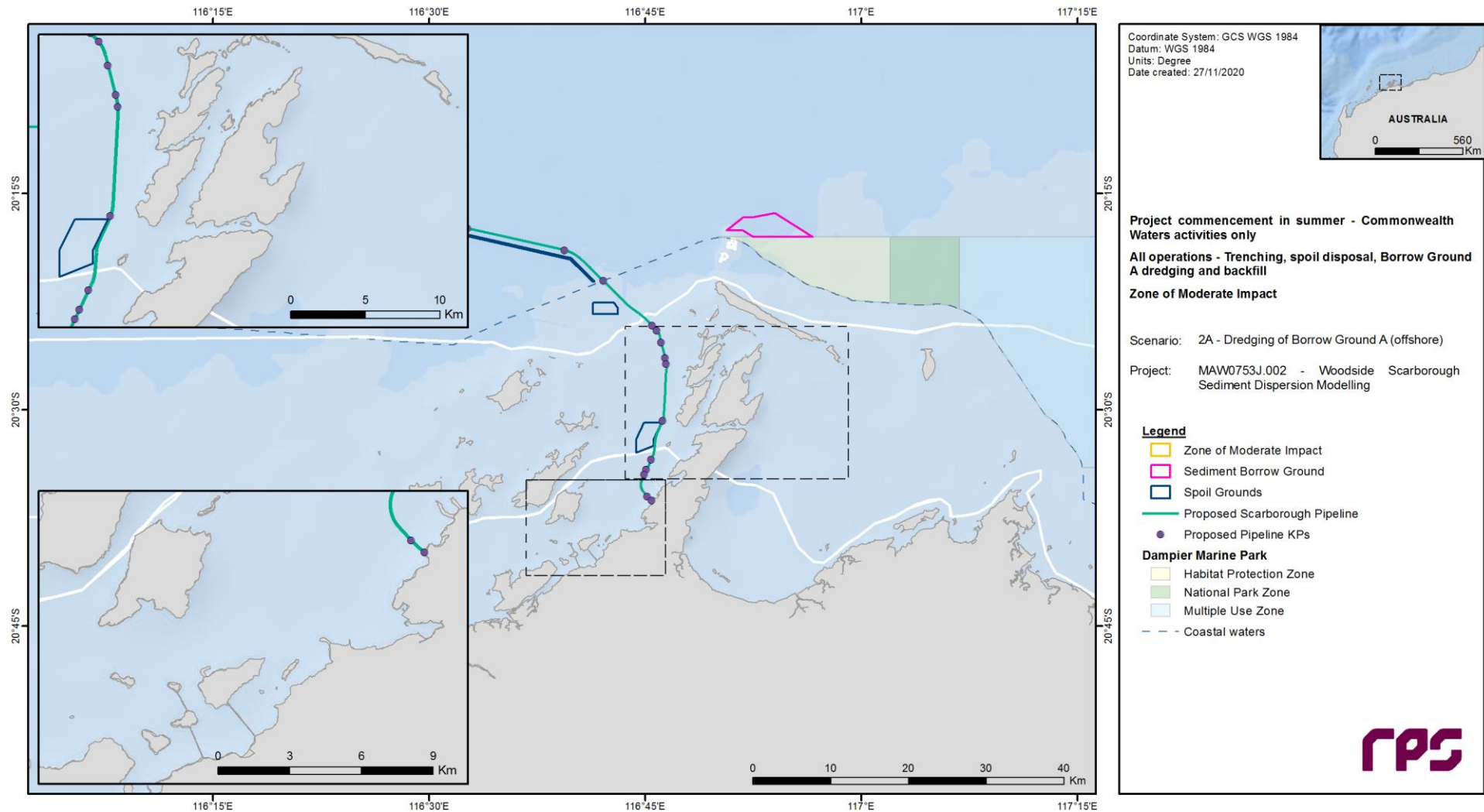


Figure B.39 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 10-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).

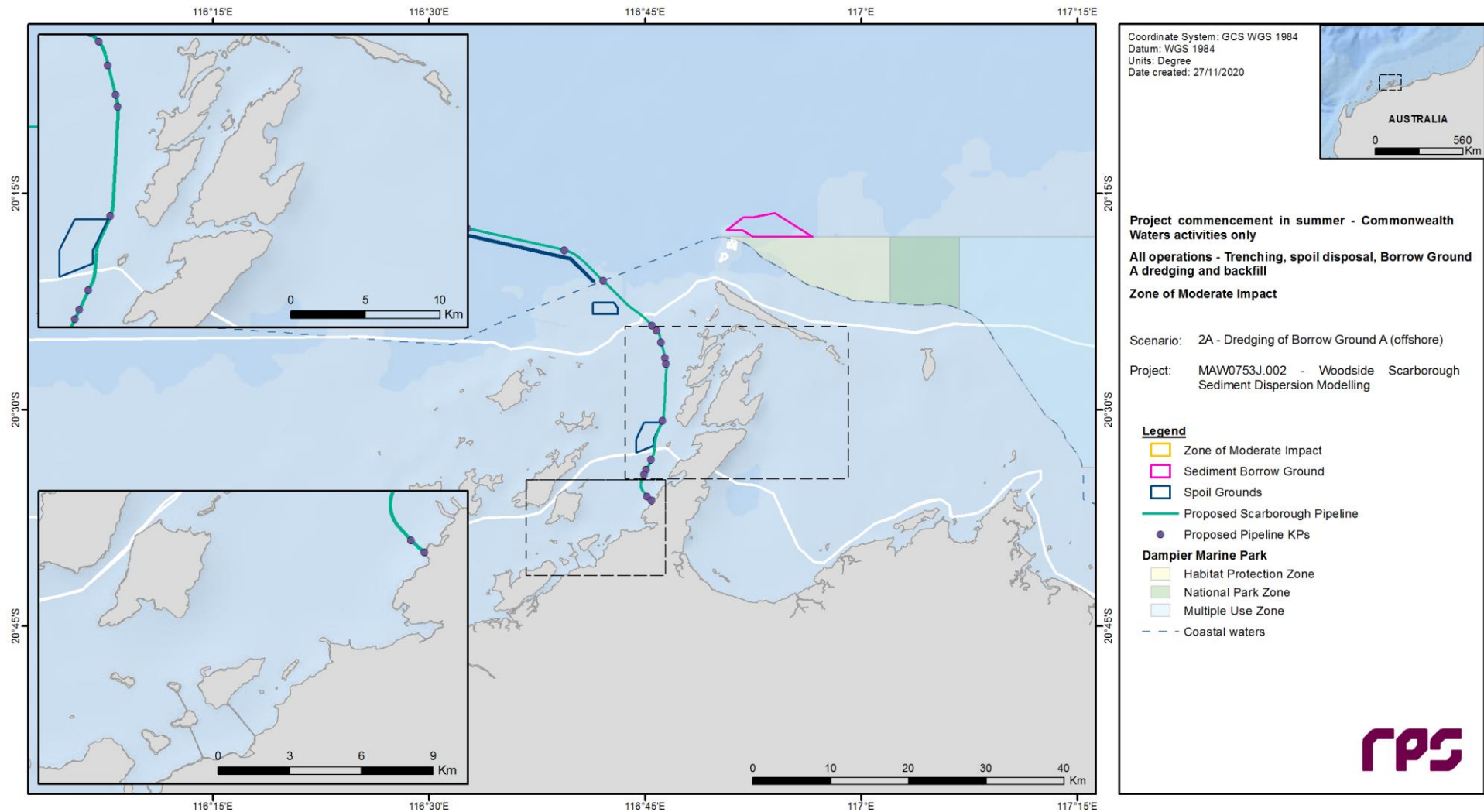


Figure B.40 Predicted Zone of Moderate Impact following application of the appropriate spatial thresholds in Table 4.3 to 14-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).

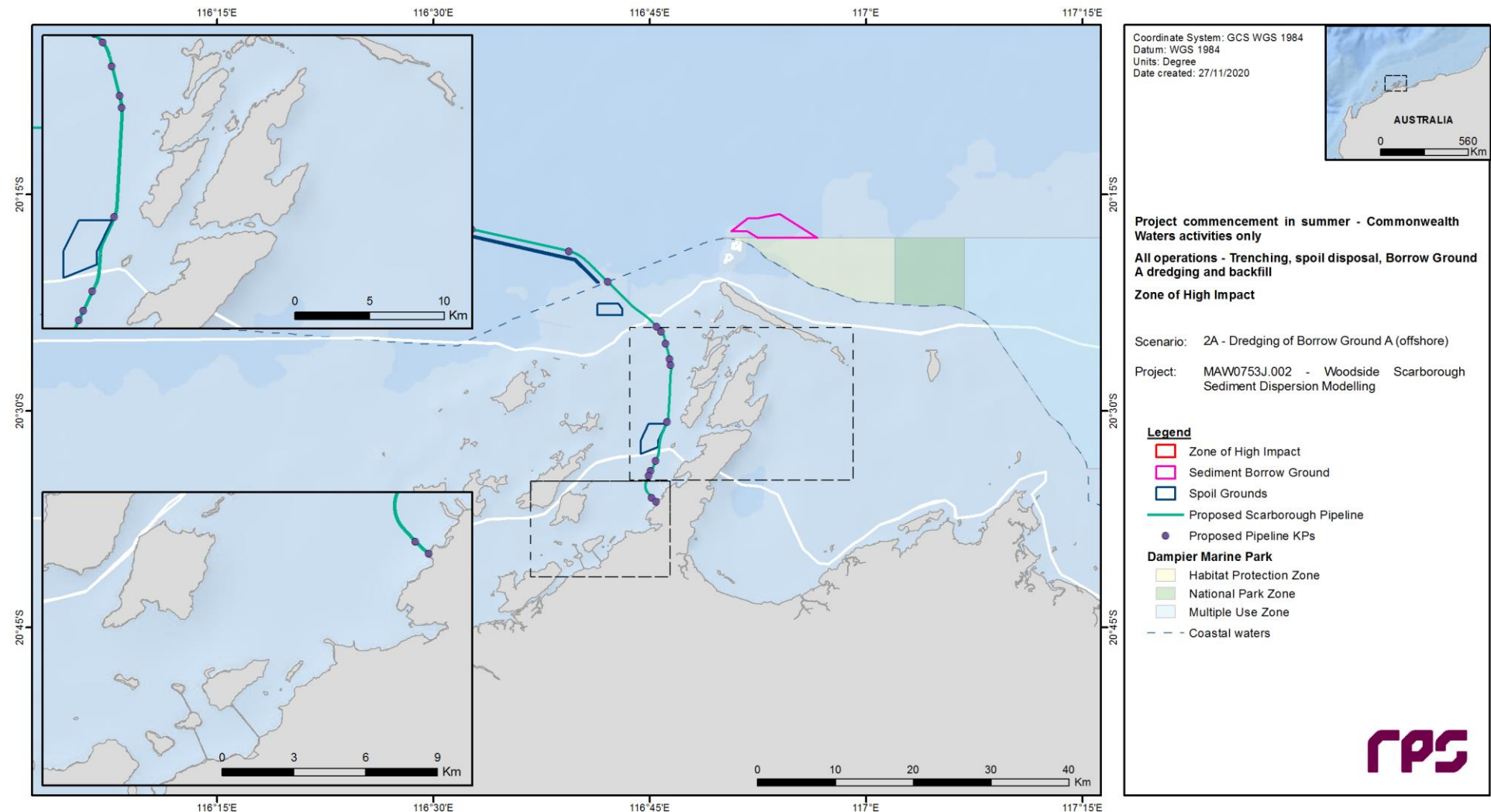


Figure B.41 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 3-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).

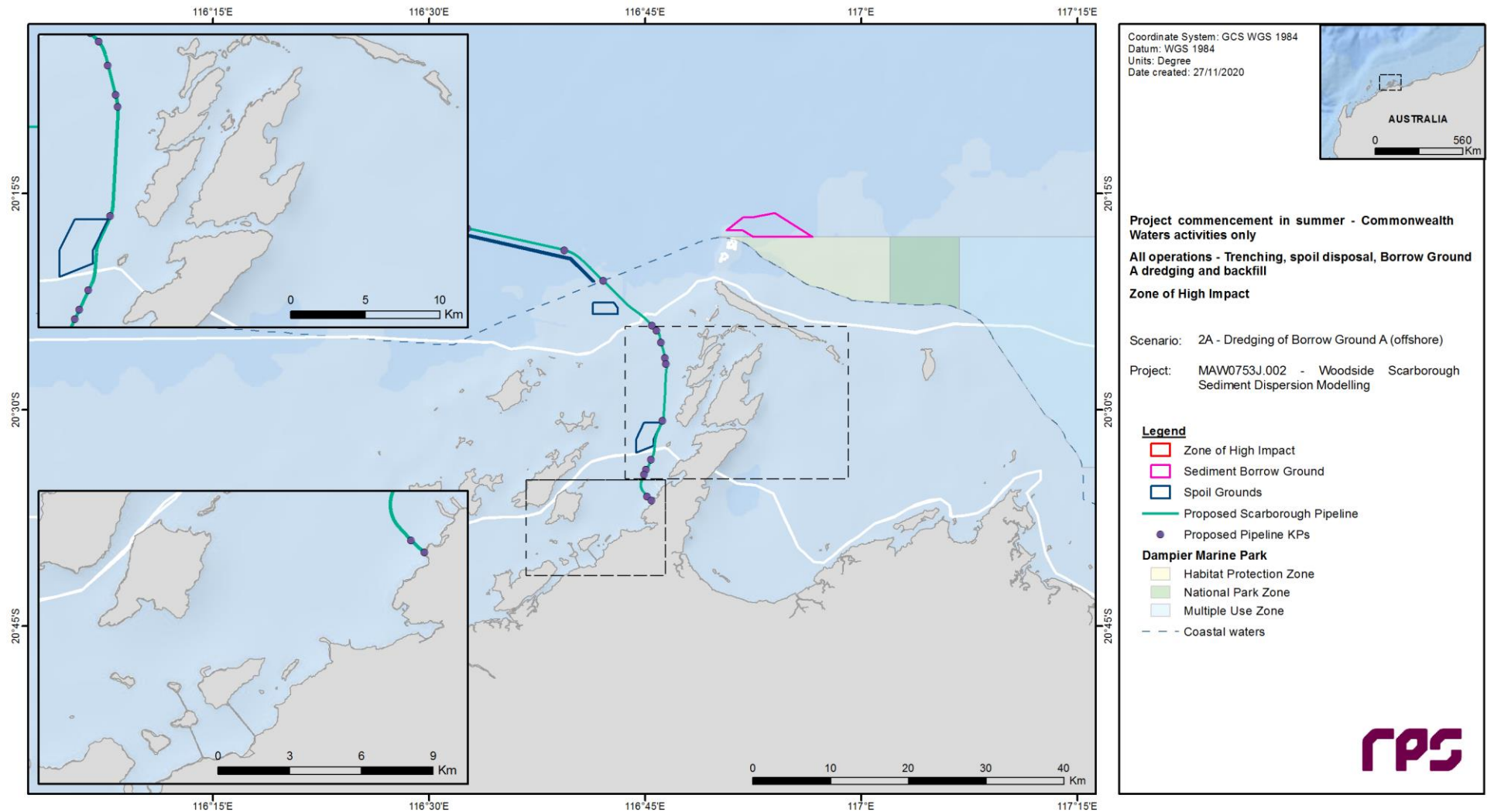


Figure B.42 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 7-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).



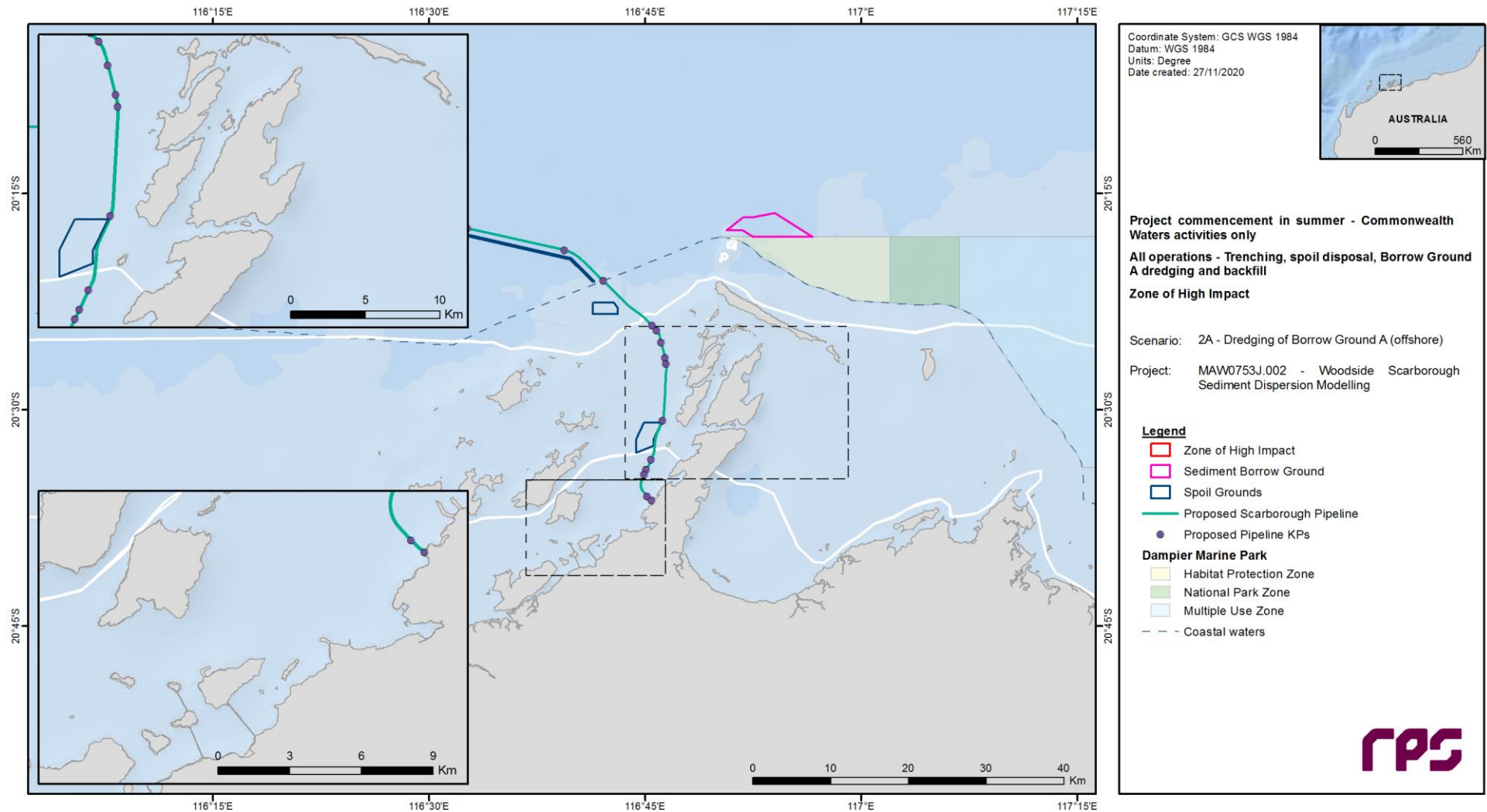


Figure B.43 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 10-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).

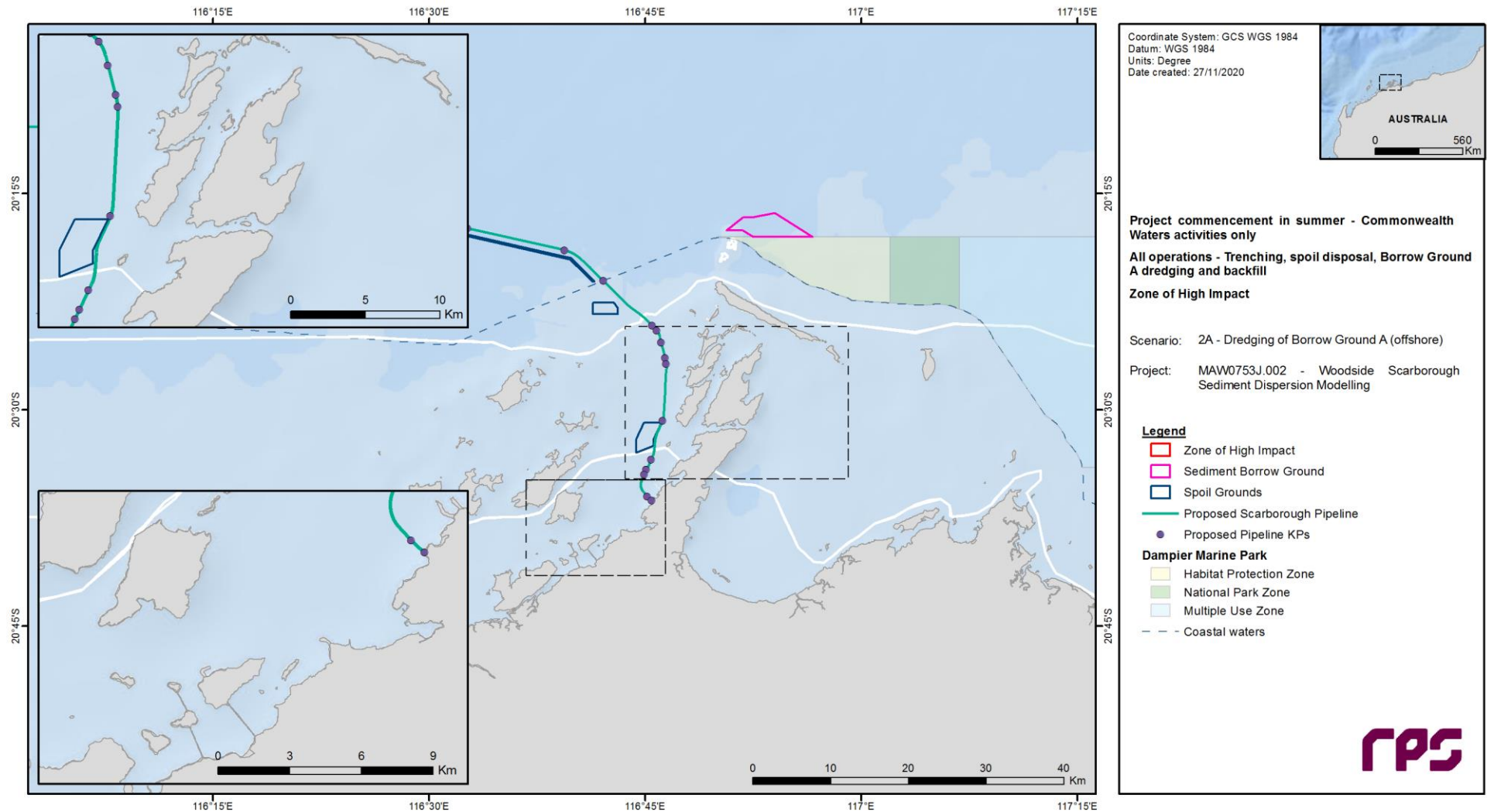


Figure B.44 Predicted Zone of High Impact following application of the appropriate spatial thresholds in Table 4.4 to 14-day (Zones A and B) and 28-day (Offshore) rolling averages of total (dredge and background) SSC throughout the duration of the relevant activities (1<sup>st</sup> February 2017 to 21<sup>st</sup> November 2017).

## APPENDIX J OIL POLLUTION FIRST STRIKE PLAN

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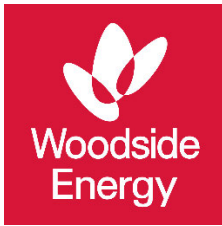
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Revision: 6

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Uncontrolled when printed. Refer to electronic version for most up to date information.





# Scarborough Seabed Intervention and Trunkline Installation Oil Pollution First Strike Plan

Corporate HSE  
Hydrocarbon Spill Preparedness

October 2023  
Revision 0e

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# SCARBOROUGH SEABED INTERVENTION AND TRUNKLINE INSTALLATION OIL POLLUTION FIRST STRIKE PLAN

**SPILL FROM FACILITY INCLUDING SUBSEA INFRASTRUCTURE**  
*(Note: Pipe laying and accommodation vessels are considered a "FACILITY" under Australian Regs).*

LOCATION	LEVEL	CONTROL AGENCY	INCIDENT CONTROLLER
COMMONWEALTH WATERS	1	Woodside	Person In Charge (PIC) with support from Onshore Team Leader (OTL)
	2/3	Woodside	Corporate Incident Coordination Centre (CICC) DUTY MANAGER
STATE WATERS	1	Woodside	CICC Duty Manager
	2/3	Department of Transport (DoT)	DoT Incident Controller
WITHIN PORT LIMITS	1	Woodside	CICC Duty Manager
	2/3	Department of Transport (DoT)	DoT Incident Controller

**SPILL FROM VESSEL**  
*(Note: SOPEP should be implemented in conjunction with this document)*

LOCATION	LEVEL	CONTROL AGENCY	INCIDENT CONTROLLER
COMMONWEALTH WATERS	1	Australian Marine Safety Authority (AMSA)	Vessel Master
	2/3	AMSA	AMSA (with response assistance from Woodside)
STATE WATERS	1	DoT	DoT Incident Controller
	2/3	DoT	DoT Incident Controller
WITHIN PORT LIMITS	1	Port Authority	Port Harbour Master
	2/3	Port Authority/ DoT	Port Harbour Master/ DoT Incident Controller

<sup>1</sup>See **Table A** for a guidance to incident characteristics of Levels 1 to 3

## Guidance to Oil Spill Incident Levels

The most significant characteristic of the below guidance should be considered when determining level or escalation potential.

**Table A: Guidance to the characteristics of incident Levels 1 to 3**

Characteristic	Level 1 Indicators	Level 2 Indicators	Level 3 Indicators
General Description	Generally able to be resolved within 24-48 hours.	Generally a response is required beyond 48 hours.	Response may extend beyond weeks.
Woodside Emergency Management (EM) Crisis Management Team (CMT) Activation	Onsite Incident Controller (IC) e.g. vessel master activated. Use of ICC support may be required.	Handover of Control from Onsite IC to Corporate Incident Management Team (CIMT) Duty Manager (DM) in Perth.	Includes Perth based CMT activation.
Number of Agencies	First-response agency and Incident Management Team (IMT).	Multi-agency response.	Agencies from across government and industry.
Environment	Isolated impacts or with natural recovery expected within weeks.	Significant impacts and recovery may take months.	Significant area and recovery may take months to years. Remediation required.
Economy	Business level disruption (i.e. Woodside).	Business failure or 'Channel' impacts.	Disruption to a sector.
Public Affairs	Local and regional media coverage (WA).	National media coverage.	International media coverage.

**For guidance on credible spill scenarios and hydrocarbon characteristics refer to [APPENDIX A](#).**

### For Spills Entering State Waters

In the event of a spill where Woodside is the responsible party and the spill may impact State waters/shorelines, Woodside will notify the Western Australian Department of Transport (DoT). The Director General of DoT is the Hazard Management Agency (HMA) for Western Australian waters. If a Level 1 vessel spill arises with port limits, Woodside will notify the Port Authority who will become the Control Agency. In the event of a Level 2/3 spill arising from a vessel within port limits, the Control Agency will be agreed between the Port Authority and DoT.

If the spill impacts State waters/shorelines and is a Level 1, Woodside will remain the Control Agency. If the spill is a Level 2/3 then DoT will become the Control Agency/HMA for the response in State waters/shorelines only. DoT will appoint an Incident Controller and form a separate Incident Management Team to manage the State waters/shorelines response only. The coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State waters/shorelines is shown in [APPENDIX E](#) – Coordination structure for a concurrent hydrocarbon spill in both Commonwealth and State Waters/shorelines.

Initially Woodside will be required to make available an appropriate number of suitably qualified persons to work in the DoT IMT (see [APPENDIX G](#)). DoT's role as the Controlling Agency/HMA for Level 2 and 3 spills in State waters/shorelines does not negate the requirement for Woodside to have appropriate plans and resources in place to adequately respond to a Marine Hydrocarbon Spill incident in State waters/shorelines 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](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 F](#).

# Response Process Overview

Use the below to determine actions required and which parts of this plan are relevant to the incident.									
For guidance on credible scenarios and hydrocarbon characteristics, refer to <a href="#">Appendix A</a> .									
<b>ALL INCIDENTS</b>	Notify the Woodside Communication Centre (WCC) on: [REDACTED]								
	Incident Controller or delegate to make relevant notifications in <b>Table 1-1</b> of this Oil Pollution First Strike Plan.								
<b>LEVEL 1</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #4F81BD; color: white;">FACILITY INCIDENT</th> <th style="background-color: #4F81BD; color: white;">VESSEL INCIDENT</th> </tr> </thead> <tbody> <tr> <td>                             Coordinate pre-identified tactics in <b>Table 2-1</b> of this Oil Pollution First Strike Plan.   <b>Remember to download each Operational Plan.</b> </td> <td>                             Notify AMSA or Port Authority (if within port limits) and coordinate pre-identified tactics in <b>Table 2-1</b> of this Oil Pollution First Strike Plan   <b>Remember to download each Operational Plan.</b> </td> </tr> </tbody> </table>	FACILITY INCIDENT	VESSEL INCIDENT	Coordinate pre-identified tactics in <b>Table 2-1</b> of this Oil Pollution First Strike Plan.  <b>Remember to download each Operational Plan.</b>	Notify AMSA or Port Authority (if within port limits) and coordinate pre-identified tactics in <b>Table 2-1</b> of this Oil Pollution First Strike Plan  <b>Remember to download each Operational Plan.</b>				
	FACILITY INCIDENT	VESSEL INCIDENT							
Coordinate pre-identified tactics in <b>Table 2-1</b> of this Oil Pollution First Strike Plan.  <b>Remember to download each Operational Plan.</b>	Notify AMSA or Port Authority (if within port limits) and coordinate pre-identified tactics in <b>Table 2-1</b> of this Oil Pollution First Strike Plan  <b>Remember to download each Operational Plan.</b>								
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.									
<b>LEVEL 2/3</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #4F81BD; color: white;">FACILITY INCIDENT</th> <th style="background-color: #4F81BD; color: white;">VESSEL INCIDENT</th> </tr> </thead> <tbody> <tr> <td>                             Handover control to CIMT and notify DoT or Port Authority (if within port limits)                         </td> <td>                             Handover control to AMSA or Port Authority (if within port limits) and stand up CIMT to assist.                         </td> </tr> <tr> <td>                             Commence quick revalidation of the recommended strategies on <b>Table 3-1</b> taking into consideration seasonal sensitivities and current situational awareness.                               Commence validated strategies.                         </td> <td> <b>If requested by AMSA/Port Authority:</b>                               Commence quick revalidation of the recommended strategies on <b>Table 3-1</b> taking into consideration seasonal sensitivities and current situational awareness.                               Commence validated strategies.                         </td> </tr> <tr> <td>                             Create an Incident Action Plan (IAP) for all ongoing operational periods   <b>The content of the IAP should reflect the selected response strategies based on current situational awareness.</b>                               For the full detailed pre-operational Net Environmental Benefit Analysis (NEBA) see the OSPRMA Appendix A                         </td> <td> <b>If requested by AMSA/Port Authority:</b>                               Create an IAP for all ongoing operational periods   <b>The content of the IAP should reflect the selected response strategies based on current situational awareness.</b>                               For the full detailed pre-operational NEBA see the OSPRMA Appendix A                         </td> </tr> </tbody> </table>	FACILITY INCIDENT	VESSEL INCIDENT	Handover control to CIMT and notify DoT or Port Authority (if within port limits)	Handover control to AMSA or Port Authority (if within port limits) and stand up CIMT to assist.	Commence quick revalidation of the recommended strategies on <b>Table 3-1</b> taking into consideration seasonal sensitivities and current situational awareness.  Commence validated strategies.	<b>If requested by AMSA/Port Authority:</b>  Commence quick revalidation of the recommended strategies on <b>Table 3-1</b> taking into consideration seasonal sensitivities and current situational awareness.  Commence validated strategies.	Create an Incident Action Plan (IAP) for all ongoing operational periods  <b>The content of the IAP should reflect the selected response strategies based on current situational awareness.</b>  For the full detailed pre-operational Net Environmental Benefit Analysis (NEBA) see the OSPRMA Appendix A	<b>If requested by AMSA/Port Authority:</b>  Create an IAP for all ongoing operational periods  <b>The content of the IAP should reflect the selected response strategies based on current situational awareness.</b>  For the full detailed pre-operational NEBA see the OSPRMA Appendix A
	FACILITY INCIDENT	VESSEL INCIDENT							
	Handover control to CIMT and notify DoT or Port Authority (if within port limits)	Handover control to AMSA or Port Authority (if within port limits) and stand up CIMT to assist.							
Commence quick revalidation of the recommended strategies on <b>Table 3-1</b> taking into consideration seasonal sensitivities and current situational awareness.  Commence validated strategies.	<b>If requested by AMSA/Port Authority:</b>  Commence quick revalidation of the recommended strategies on <b>Table 3-1</b> taking into consideration seasonal sensitivities and current situational awareness.  Commence validated strategies.								
Create an Incident Action Plan (IAP) for all ongoing operational periods  <b>The content of the IAP should reflect the selected response strategies based on current situational awareness.</b>  For the full detailed pre-operational Net Environmental Benefit Analysis (NEBA) see the OSPRMA Appendix A	<b>If requested by AMSA/Port Authority:</b>  Create an IAP for all ongoing operational periods  <b>The content of the IAP should reflect the selected response strategies based on current situational awareness.</b>  For the full detailed pre-operational NEBA see the OSPRMA Appendix A								

# 1. NOTIFICATIONS (ALL LEVELS)

The Incident Controller or delegate must ensure the below notifications (**Table 1-1**) are completed within the designated timeframes.

**Table 1-1: Immediate notifications**

Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
<p><b>Notifications to be made for ALL LEVELS of spill</b>  <i>(For spills from a vessel the following notifications must be undertaken by a WEL representative).</i></p>							
<p><b>In the event of an incident between campaign vessels, activate relevant vessel Emergency Response Plans and/or Bridging Documents</b></p>							
<p><b>In the event of an incident impacting Scarborough live well infrastructure, also activate <u>Scarborough Drilling and Completions Oil Pollution First Strike Plan</u></b></p>							
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 <sup>1</sup> )	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]

<sup>1</sup> Notification to NOPSEMA must be from a Woodside Representative.

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Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
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	
As soon as practicable if spill arises in or is likely to extend into port limits.	CIMT DM or Delegate	Pilbara Ports Authority (PPA)	PPA Dampier Vessel Traffic Services (VTS)	[REDACTED]	Any spill within or close to the Dampier Port boundary should be reported immediately to the PPA Dampier VTS	Verbal	
Within 2 hours of becoming aware of a marine oil 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.  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: <ul style="list-style-type: none"> <li>• titleholder details</li> <li>• time and location of the incident</li> <li>• proposed response arrangements and locations as per the OPEP</li> <li>• contact details for the response coordinator</li> </ul>	Verbal	

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Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
					<ul style="list-style-type: none"> <li>confirmation of access to relevant monitoring and evaluation reports when available.</li> </ul>		
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)	■■■■■■■■ ■■■■■■■■	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification.	■■■■■■■■ ■■■■■■■■	
<b>IN THE EVENT OF AN INCIDENT IMPACTING ANOTHER TITLEHOLDERS' LIVE INFRASTRUCTURE, NOTIFY RELEVANT PARTY</b>							
Immediately	WCC	Chevron Australia Pty Ltd (CAPL)	Chevron Perth Security Operations Centre	■■■■■■■■ ■■■■■■■■ ■■■■■■■■	Verbally notify CAPL Security Operations Centre of event and estimated volume and hydrocarbon lost. Establish which party will be IC for spill incident.	Verbal	
Immediately	WCC	Santos Health, Safety & Security	Santos Crisis, Emergency Response & Security Manager	■■■■■■■■	Verbally notify Santos of event and estimated volume and hydrocarbon lost. Establish which party will be IC for spill incident.	Verbal	
			Emergency Response Coordinator (Oil Spill Response)	■■■■■■■■			
		Santos WA: Upstream Health, Safety & Environment Division	Senior Crisis & Emergency Response Adviser	■■■■■■■■			
<b>ADDITIONAL LEVEL 2/3 NOTIFICATIONS</b>							
As soon as practicable	CIMT DM or Delegate	AMOSC	AMOSC Duty Manager	■■■■■■■■	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.	■■■■■■■■ ■■■■■■■■	

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Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
					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.		
As soon as practicable	CIMT DM or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	██████████	Contact OSRL duty manager and request assistance from technical advisor in Perth.  Send the completed notification form to OSRL as soon as practicable.  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	Notification: ██████████  Mobilisation: ██████████	
As soon as practicable if there is potential for oiled wildlife or the spill is expected to contact land or waters managed by WA Department of Biodiversity, Conservation and Attractions	CIMT DM or Delegate	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Duty Officer	██████████	Phone call notification	Verbal	
As soon as practicable	Public Information	Relevant persons and 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	Verbal initially	

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Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
					Scarborough Seabed Intervention and Trunkline Installation. Relevant persons and organisations will be re-assessed throughout the response period.		
As soon as practicable	Public Information	Murujuga Aboriginal Corporation (MAC)	MAC CEO	██████████	Woodside will engage MAC and seek input to spill response planning as the relevant cultural authority as soon as practicable after becoming aware of a marine pollution incident from Scarborough trunkline activities that may impact cultural heritage values.	Verbal	
As soon as practicable if extra personnel are required for incident support	CIMT DM or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	██████████ ██████████	Activate the contract with MSRC (in full) for the provision of up to 30 personnel depending on what skills are required. Please note that provision of these personnel from MSRC are on a best endeavours basis and are not guaranteed.	Verbal	

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## 2. LEVEL 1 RESPONSE

### 2.1 Mobilisation of response techniques

For the relevant hydrocarbon type, undertake quick revalidation of the recommended techniques and pre-identified tactics indicated with a 'Yes' in Table 2-1. Undertake all validated pre-identified tactics immediately. These tactics should be carried out using the associated plan identified under Table 2-1 Operational Plan column.

All response techniques and pre-identified tactics have been identified from the pre-operational Net Environmental Benefits Analysis (NEBA) presented in the Scarborough Seabed Intervention and Trunkline Installation Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

Table 2-1: Level 1 response summary

Response Techniques	Hydrocarbon Type Marine Diesel Oil	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
Please consider instructing the CIMT DM to activate or implement any of the following Pre-Identified tactics. The following tactics will assist in answering the '7 Questions of Spill Assessment' identified in <a href="#">Appendix C</a> to increase situational awareness.						
Monitor and Evaluate (Operational Monitoring, OM02)	Yes	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile. If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Operations	<b>DAY 1:</b> Tracking buoy deployed within two hours.		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational Monitoring Operational Plan). Deploy tracking buoy in accordance with <a href="#">APPENDIX D</a> .
Monitor and evaluate – predictive modelling (OM01)	Yes	Undertake initial modelling using the <a href="#">Rapid assessment oil spill tool</a> and weathering fate analysis using ADIOS (or refer to the hydrocarbon information in <a href="#">Appendix A</a> ).	Intelligence or Environment	<b>DAY 1:</b> Initial modelling within six hours using the Rapid Assessment Tool.		Predictive Modelling of Hydrocarbons to Assess Resources at Risk (OM01 of The Operational Monitoring Operational Plan). <i>Planning to download immediately and follow steps</i>
	Yes	Send Oil Spill Trajectory Modelling (OSTM) form ( <a href="#">Appendix B Form 7</a> ) to RPS Response team (email: [REDACTED]).	Intelligence	<b>DAY 1:</b> Detailed modelling within four hours of RPS Response receiving information from Woodside.		
Monitor and evaluate – aerial surveillance (OM02)	Yes	Instruct Aviation Duty Manager to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in <a href="#">Appendix B Form 8</a> .	Logistics - Aviation	<b>DAY 1:</b> Two trained aerial observers. One aircraft available.		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational Monitoring Operational Plan).
Monitor and evaluate – satellite tracking (OM02)	Yes	The Intelligence duty manager should be instructed to stand up KSAT to provide satellite imagery of the spill (email [REDACTED]).	Intelligence	<b>DAY 1:</b> Service provider will confirm availability of an initial acquisition within two hours.		<i>Planning to download immediately and follow steps</i>

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				Data received to be uploaded into Woodside Common Operating Picture.		
Monitor and evaluate – monitoring hydrocarbons in water (OM03)	Yes	Consider the need to mobilise resources to undertake water quality monitoring (OM03).	Planning or Environment	<b>DAY 3:</b> Water quality assessments access and capability.		Detecting and Monitoring for the Presence and Properties of Hydrocarbons in the Marine Environment (OM03 of The Operational Monitoring Operational Plan).
Monitor and evaluate – pre-emptive assessment of receptors at risk (OM04)	Yes	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	<b>DAY 2:</b> In agreement with WA DoT, deployment of two specialists to reach of the Response Protection Areas (RPA) with predicted impacts.		Pre-emptive Assessment of Sensitive Receptors (OM04 of The Operational Monitoring Operational Plan).
Monitor and evaluate – shoreline assessment (OM05)	Yes	Consider the need to mobilise resources to undertake shoreline assessment surveys (OM05).	Planning or Environment	<b>DAY 2:</b> In agreement with WA DoT, deployment of two specialists in shoreline clean-up assessment (SCAT) for each of the RPAs with predicted impacts.		Shoreline Assessment (OM05 of The Operational Monitoring Operational Plan).
Shoreline Protection and Deflection	Potentially	Equipment from Woodside and/or PPA (if within port limits) mobilised. If required additional equipment mobilised from AMOSC and AMSA Western Australian stockpiles.	Logistics and Planning	<b>DAY 1:</b> In agreement with WA DoT and/or PPA (if within port limits), activate relevant Tactical Response Plans (TRPs) within 12 hours. In agreement with WA DoT and/or PPA (if within port limits), mobilise teams to RPAs within 12 hours of operational monitoring predicting impacts. In agreement with WA DoT and/or PPA (if within port limits), equipment mobilised from closest stockpile within 12hours. Supplementary equipment mobilised from AMOSC, AMSA stockpiles within 24 hours		Protection and Deflection Operational Plan <i>Logistics to download immediately and follow steps</i>

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### 3. LEVEL 2/3 RESPONSE

#### 3.1 Mobilisation of response techniques

For the relevant hydrocarbon type, undertake quick revalidation of the recommended techniques and pre-identified tactics indicated with a 'Yes' in Table 3-1. Undertake all validated pre-identified tactics immediately. These tactics should be carried out using the associated plan identified under Table 3-1 Operational Plan column.

All response techniques and pre-identified tactics have been identified from the pre-operational Net Environmental Benefits Analysis (NEBA) presented in the Scarborough Seabed Intervention and Trunkline Installation Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).



**Table 3-1: Level 2/3 response summary**

Response Techniques	Hydrocarbon Type	Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel Oil					
Monitor and evaluate – tracking buoy (OM02)	Yes	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile.  If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Operations	<b>DAY 1:</b> Tracking buoy deployed within two hours.		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02) of The Operational Monitoring Operational Plan.  Deploy tracking buoy in accordance with <a href="#">APPENDIX D</a> .
Please consider instructing the CIMT DM to activate or implement any of the following Pre-Identified tactics. The following tactics will assist in answering the '7 Questions of Spill Assessment' identified in <a href="#">Appendix C</a> to increase situational awareness.						
Monitor and evaluate – predictive modelling (OM01)	Yes	Undertake initial modelling using the <a href="#">Rapid assessment oil spill tool</a> and weathering fate analysis using ADIOS (or refer to the hydrocarbon information in <a href="#">Appendix A</a> ).	Intelligence or Environment	<b>DAY 1:</b> Initial modelling within six hours using the Rapid Assessment Tool.		Predictive Modelling of Hydrocarbons to Assess Resources at Risk (OM01 of The Operational Monitoring Operational Plan). <i>Planning to download immediately and follow steps</i>
	Yes	Send Oil Spill Trajectory Modelling (OSTM) form ██████████ to RPS Response team (email: ██████████)	Intelligence	<b>DAY 1:</b> Detailed modelling within 4 hours of RPS Response receiving information from Woodside.		
Monitor and evaluate – aerial surveillance (OM02)	Yes	Instruct Aviation Duty Manager to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in ██████████	Logistics - Aviation	<b>DAY 1:</b> Two trained aerial observers. One aircraft available.  Report made available to the IMT within two 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
Monitor and evaluate – satellite tracking (OM02)	Yes	The Intelligence duty manager should be instructed to stand up Kongsberg Satellite Services (KSAT) to provide satellite imagery of the spill.	Intelligence	<b>DAY 1:</b> Service provider will confirm availability of an initial acquisition within two hours.		

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		██████████ ██████████		Data received to be uploaded into Woodside Common Operating Picture.	
Monitor and evaluate – monitoring hydrocarbons in water (OM03)	Yes	Consider the need to mobilise resources to undertake water quality monitoring (OM03).	Planning or Environment	<b>DAY 3:</b> 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).
Monitor and evaluate – pre-emptive assessment of receptors at risk (OM04)	Yes	Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	<b>DAY 2:</b> In agreement with WA DoT, deployment of two specialists for each of the Response Protection Areas (RPA) with predicted impacts.	Pre-emptive Assessment of Sensitive Receptors (OM04 of The Operational Monitoring Operational Plan).
Monitor and evaluate – shoreline assessment (OM05)	Yes	Consider the need to mobilise resources to undertake shoreline assessment surveys (OM05).	Planning or Environment	<b>DAY 2:</b> In agreement with WA DoT, deployment of two specialists in SCAT for each of the RPAs with predicted impacts.	Shoreline Assessment (OM05 of The Operational Monitoring Operational Plan).
Surface Dispersant	No	This response strategy is not recommended.			
Containment and Recovery	No	This response strategy is not recommended.			
Mechanical Dispersion	No	This response strategy is not recommended.			
In-situ Burning	No	This response strategy is not recommended.			
Shoreline Protection and Deflection	Yes	Equipment from Woodside, PPA (if within port limits), AMOSC and AMSA Western Australian Stockpiles mobilised. Consideration of mobilisation of interstate/international shoreline protection equipment (i.e. OSRL).	Logistics and Planning	<b>DAY 1:</b> In agreement with WA DoT and/or PPA (if within port limits), activate relevant Tactical Response Plans (TRPs) within 12 hours.  In agreement with WA DoT and/or PPA (if within port limits), mobilise teams to RPAs within 12 hours of operational monitoring predicting impacts.	Protection and Deflection Operational Plan  <i>Logistics to download immediately and follow steps</i>

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				<p>In agreement with WA DoT and/or PPA (if within port limits), equipment mobilised from closest stockpile within 12-hours.</p> <p>Supplementary equipment mobilised from AMOSC, AMSA stockpiles within 24 hours</p> <p><b>DAY 2:</b></p> <p>Supplementary equipment mobilised from OSRL within 48 hours (if required)</p>	
<b>Shoreline Clean Up</b>	Yes	<p>Equipment from Woodside, and/or PPA (if within port limits) AMOSC and AMSA Western Australian Stockpiles and relevant personnel mobilised.</p> <p>Consideration of mobilisation of interstate/international shoreline clean-up equipment and relevant personnel (i.e. OSRL).</p>	Logistics and Planning	<p><b>DAY 1:</b></p> <p>In agreement with WA DoT and/or PPA (if within port limits), activate relevant Tactical Response Plans (TRPs) within 12 hours.</p> <p>Equipment mobilised from closest stockpile within 24 hours</p> <p><b>DAY 2:</b></p> <p>Deployment of shoreline clean-up teams to contaminated RPAs.</p> <p>Supplementary equipment mobilised from State, AMOSC, AMSA stockpiles within 48 hours, if required.</p> <p>Access to at least 213 m<sup>3</sup> of solid and liquid waste storage available within 2 days upon activation of 3rd party contract.</p>	Shoreline Clean-up Operational Plan <i>Logistics to download immediately and follow steps</i>
<b>Oiled Wildlife Response</b>	Yes	<p>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.</p> <p>Mobilise AMOSC Oiled Wildlife Containers.</p> <p>Consider whether additional equipment is required from local suppliers.</p>	Logistics and Planning	<p><b>DAY 5:</b></p> <p>Contracted capability to treat up to an additional 250 individual fauna within a five-day period.</p> <p>Facilities for oiled wildlife rehabilitation are operational 24/7.</p>	Oiled Wildlife Response Operational Plan

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<b>Scientific Monitoring (Type II)</b>	<b>Yes</b>	Notify Woodside science team of spill event.	Environment			Oil Spill Scientific Monitoring Programme – Operational Plan
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## 4. PRIORITY RECEPTORS

Note: DoT are the Control Agency to respond to all the sites listed below in a Level 2/3 spill into State waters/shorelines.

Action: Provide DoT with all relevant Tactical Response Plans for Priority Protection Areas.

Stochastic modelling has been completed for a worst case spill scenario of an instantaneous surface release of 2000 m<sup>3</sup> of marine diesel, representing loss of vessel fuel tank integrity after a collision, at three locations: outside Mermaid Sound (Credible Scenario-01 (CS-01)), within Montebello Marine Park (Credible Scenario-02 (CS-02)) and at the proposed Floating Production Unit (FPU) location in the Scarborough field (Credible Scenario-03 (CS-03)). Only CS-01 results in any impacts at response threshold and has therefore been used to plan and scale the response.

Based on hydrocarbon spill risk modelling results for the three scenarios the sensitive receptors outlined in Table 4-2 are identified as priority protection areas, as they have the potential to be contacted by hydrocarbon at or above response threshold levels within 48 hours of a spill. Please note that impact thresholds (10 g/m<sup>2</sup> surface hydrocarbon concentration, 100 g/m<sup>2</sup> shoreline accumulation, and 100 ppb entrained hydrocarbon concentration) are used to determine the environment that may be affected (EMBA) identified in the Environment Plan and are lower than response thresholds (Table 4-1).

Table 4-1: Response thresholds

Surface Hydrocarbon (g/m <sup>2</sup> )	Description
>10	Predicted minimum threshold for commencing operational monitoring <sup>2</sup>
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application <sup>3</sup>
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application
100	Predicted minimum shoreline accumulation threshold for shoreline assessment operations
250	Predicted minimum threshold for commencing shoreline clean-up operations

Table 4-2: Receptors for priority protection with potential impact within 48 hours

Receptor	Distance and Direction from Operational Area (km)	Minimum time to shoreline contact (above 100 g/m <sup>2</sup> ) in days	Maximum shoreline accumulation (above 100 g/m <sup>2</sup> ) in m <sup>3</sup>	Tactical Response Plans
Dampier Archipelago	13 km East	53 hours (2.2 days) <i>NB &gt;48 hour criteria but included for conservatism</i>	3	<a href="#">Legendre Island – Dampier</a> <a href="#">Rosemary Island – Dampier</a> Additional TRPs available via this <a href="#">Link</a>
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:

- Dampier MP (surface hydrocarbon concentrations  $\geq 10$  g/m<sup>2</sup>)
- Montebello MP (surface hydrocarbon concentrations  $\geq 10$  g/m<sup>2</sup>)

<sup>2</sup> 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 WA DoT or AMSA.

<sup>3</sup> At 50 g/m<sup>2</sup> 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 displaying the spread of surface oil.

- Gascoyne MP (surface hydrocarbon concentrations  $\geq 10$  g/m<sup>2</sup>)

Tactical Response plans for these locations can be accessed here: [Oil Spill Tactical Response Plans](#). 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 4-1** illustrates the location of regional sensitive receptors in relation to the Scarborough Seabed Intervention operational area and identifies priority protection areas.

Consideration should be given to other stakeholders (including mariners) in the vicinity of the spill location. **Table 4-3** indicates the assets within the vicinity of the Scarborough Seabed Intervention and Trunkline Installation Operational Area.

**Table 4-3: Assets in the vicinity of the Scarborough Seabed Intervention and Trunkline Installation Operational Area**

Asset	Distance and Direction from Operational Area	Operator
Dampier Port	0 km – from eastern end of trunkline	Pilbara Port Authority
Pluto Platform	2 km north	Woodside
Stag Platform	5 km south	Jadestone
Wheatstone Platform	10 km north	Chevron
Reindeer Platform	15 km north	Santos
Goodwyn Platform	48 km north	Woodside

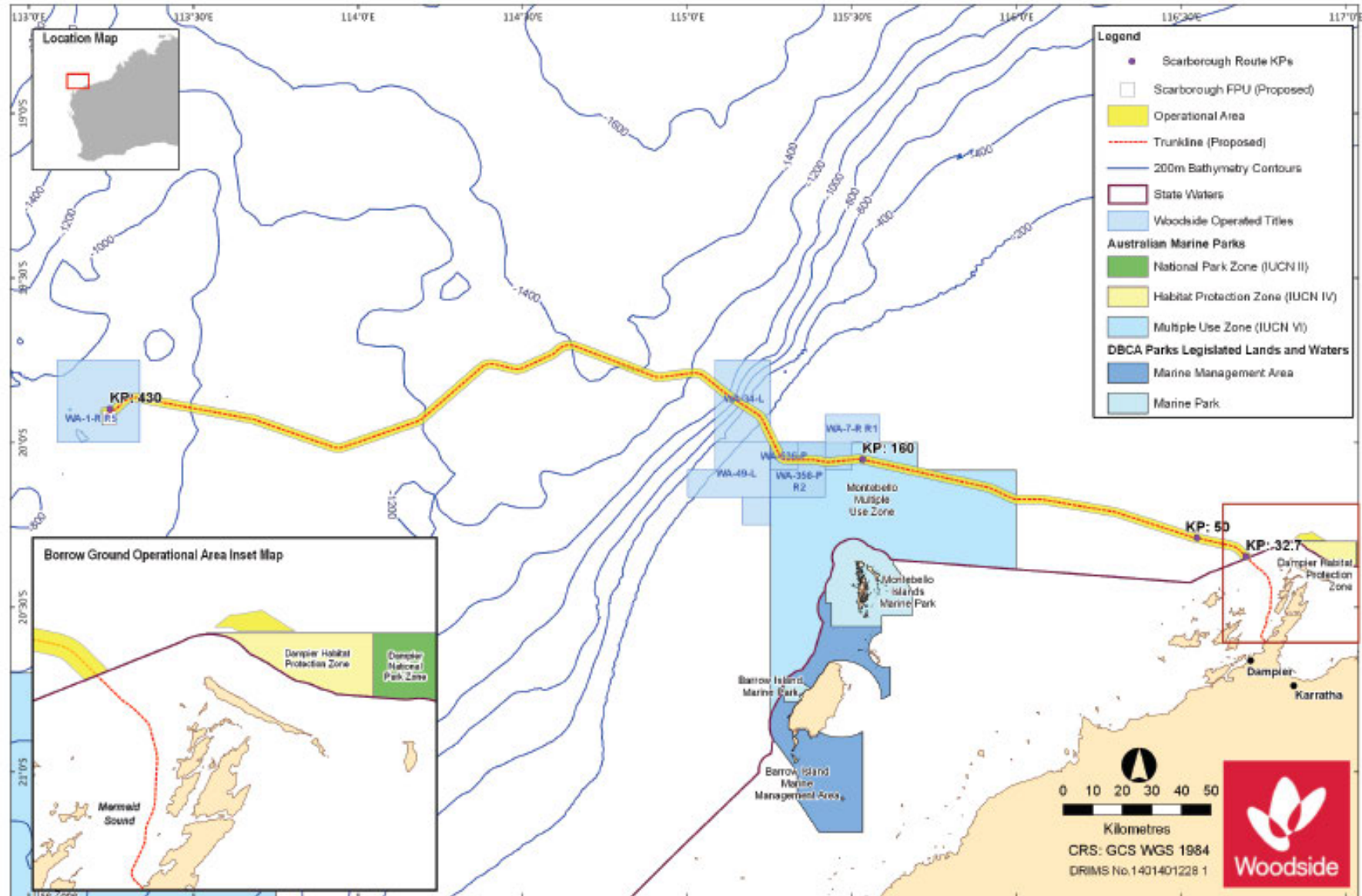


Figure 4-1 Regional Sensitive Receptors – Scarborough Seabed Intervention and Trunkline Installation

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## APPENDIX A – CREDIBLE SPILL SCENARIOS AND HYDROCARBON INFORMATION

For more detailed hydrocarbon information see the [Hydrocarbon Data Directory](#)

### Credible Spill Scenarios

Scenario	Product	Maximum Volumes	Suggested ADIOS2 Analogue*
<b>WCCS:</b> Instantaneous release from Vessel Collision outside Mermaid Sound (CS-01)	Marine Diesel	2000 m <sup>3</sup> release volume resulting in 100 m <sup>3</sup> residual oil on water surface	Diesel Fuel Oil (Southern USA 1) API of 37.2
Instantaneous release from Vessel Collision within Montebello Marine Park (CS-02)	Marine Diesel	2000 m <sup>3</sup> release volume resulting in 100 m <sup>3</sup> residual oil on water surface	Diesel Fuel Oil (Southern USA 1) API of 37.2
Instantaneous release from Vessel Collision at the proposed Floating Production Unit (FPU) location in the Scarborough field (CS-03)	Marine Diesel	2000 m <sup>3</sup> release volume resulting in 100 m <sup>3</sup> residual oil on water surface	Diesel Fuel Oil (Southern USA 1) API of 37.2

\*Initial screening of possible ADIOS2 analogues was done by considering hydrocarbons with similar APIs. Suggested selection was based on the closest distillation cut to WEL hydrocarbon. Only hydrocarbons with distillation cuts that showed results for > 380°C were included in selection process.

### Marine Diesel (Group 2 Oil)

Marine diesel is a mixture of volatile and persistent hydrocarbons, with approximately 40-50% by mass predicted to evaporate over the first day or two, depending upon the prevailing conditions, with further evaporation slowing over time. The heavier components of diesel have a strong tendency to entrain into the upper water column due to wind waves, but can refloat to the surface if wind waves abate.

The mass balance forecast for the constant calm wind case (**Figure A-1**) for marine diesel shows that 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 the variable-wind case (**Figure A-2**), where the winds are of greater strength, entrainment of marine diesel into the water column is indicated to be significant. Approximately 24 hours after the spill, around 45% of the oil mass is forecast to have entrained and a further 35% is forecast to have evaporated, leaving only a small proportion of the oil floating on the water surface (<1%). The residual compounds will tend to remain entrained beneath the surface under conditions that generate wind waves (approximately >6 m/s).

The increased level of entrainment in the variable-wind case will result in a higher percentage of biological and photochemical degradation, where the decay of the floating slicks and oil droplets in the water column occurs at an approximate rate of 1.8% per day with an accumulated total of ~13% after 7 days, in comparison to a rate of ~0.2% per day and an accumulated total of 1.5% after 7 days in the constant-wind case. Given the large proportion of entrained oil and the tendency for it to remain mixed in the water column, the remaining hydrocarbons will decay and/or evaporate over time scales of several weeks to a few months. This long weathering duration will extend the area of potential effect, requiring the break-up and dispersion of the slicks and droplets to reduce concentrations below the thresholds

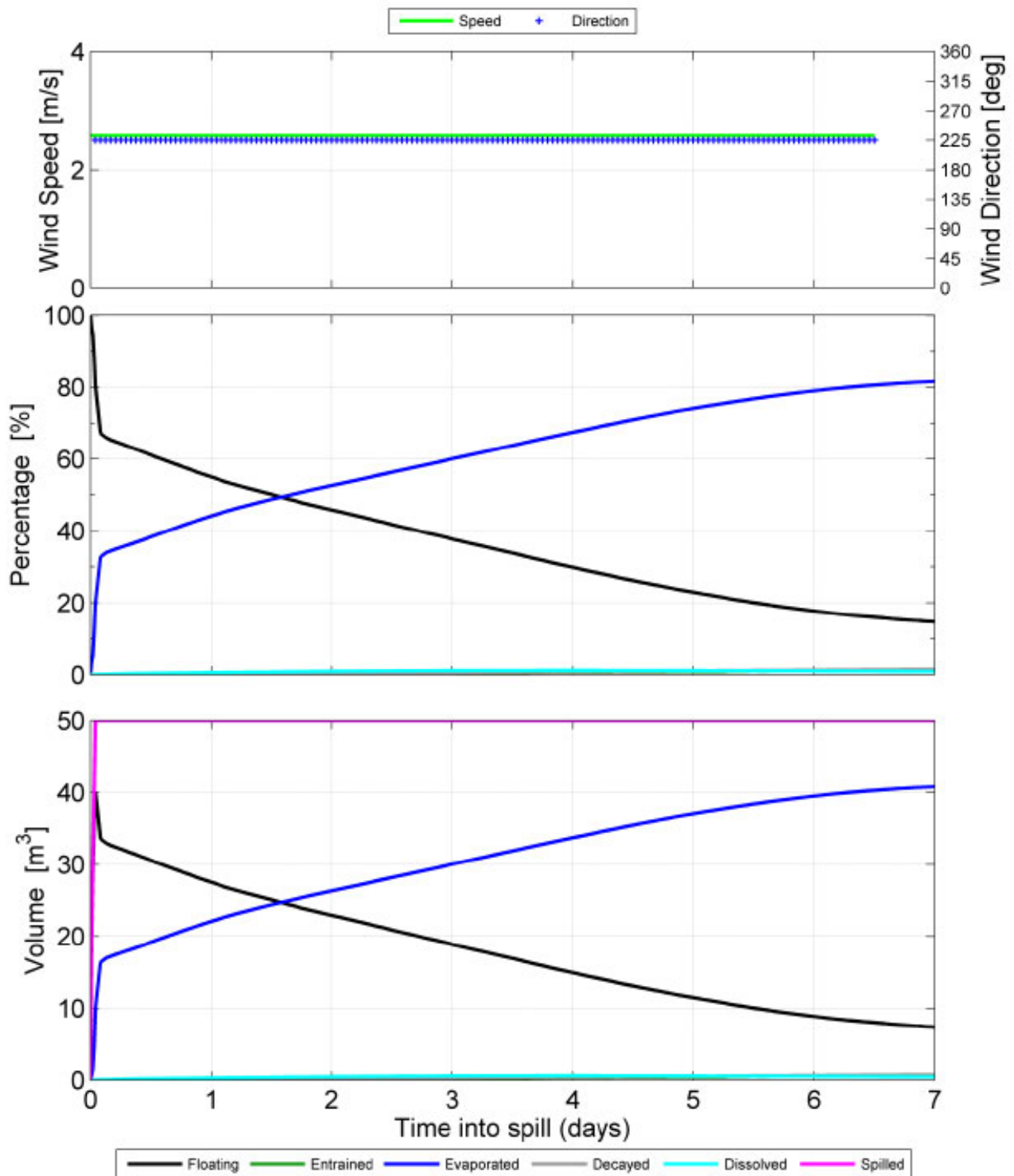
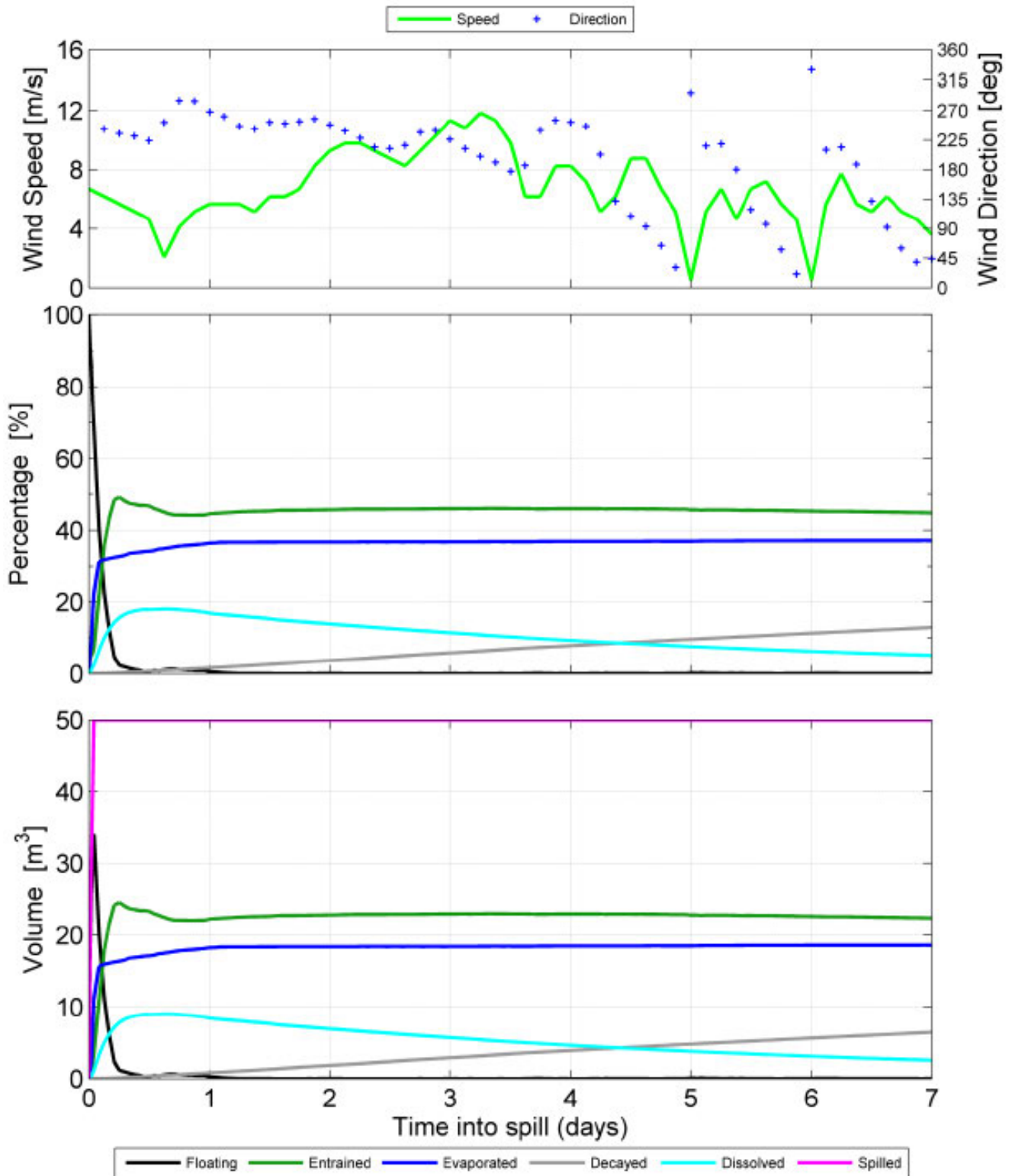


Figure A-1: Mass balance plot representing, as proportion (middle panel) and volume (bottom panel) the weathering of marine diesel spilled onto the water surface as a one-off release (50m<sup>3</sup> over 1 hour) and subject to a constant 5kn (2.6 m/s) wind at 27°C water temperature and 25°C air temperature.



**Figure A-2: 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 (50m<sup>3</sup> over 1 hour) and subject to variable wind at 27°C water temperature and 25°C air temperature.**

**APPENDIX B – FORMS**

Form No.	Form Name	Link
1	Record of Initial Verbal Notification to NOPSEMA Template	■
2	NOPSEMA Incident Report Form	■
3	Marine Pollution Report (POLREP – AMSA)	■
4	AMOSOC Service Contract Note	■
5	Marine Pollution Report (POLREP – DoT)	■
6a	OSRL Initial Notification Form	■
6b	OSRL Mobilisation Activation Form	■
7	RPS Response Oil Spill Trajectory Modelling Request	■
8	Aerial Surveillance Observer Log	■

**FORM 1**

**Record of initial verbal notification to NOPSEMA**



**NOPSEMA phone:** [REDACTED]

Date of call	
Time of call	
Call made by	
Call made to	

**Information to be provided to NOPSEMA:**

<b>Date and Time of incident/ time caller became aware of incident</b>	
<b>Details of incident</b>	<b>1 Location</b> _____
	<b>2 Title</b> _____
	<b>3 Hydrocarbon source</b>
	<input type="checkbox"/> Platform _____
	<input type="checkbox"/> Pipeline _____
	<input type="checkbox"/> FPSO _____
	<input type="checkbox"/> Exploration drilling _____
	<input type="checkbox"/> Well _____
	<input type="checkbox"/> Other (please specify) _____
<b>4 Hydrocarbon type</b> _____	
<b>5 Estimated volume of hydrocarbon</b> _____	
<b>6 Has the discharge ceased?</b> _____	
<b>7 Fire, explosion or collision?</b> _____	
<b>8 Environment Plan(s)</b> _____	
<b>9 Other Details</b> _____	
<b>Actions taken to avoid or mitigate environmental impacts</b>	
<b>Corrective actions taken or proposed to stop, control or remedy the incident</b>	

**After the initial call is made to NOPSEMA, please send this record as soon as practicable to:**

- 1. NOPSEMA** [REDACTED]
- 2. NOPTA** [REDACTED]
- 3. DMIRS** [REDACTED]

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**FORM 2**

**[insert NOPSEMA Incident Report Form when printing]**





**FORM 3**

**[insert Marine Pollution Report (POLREP – AMSA) when printing]**



**FORM 4**

**[insert AMOSC Service Contract note when printing]**



**FORM 5**

**[insert Marine Pollution Report (POLREP – DoT) when printing]**



**FORM 6a**

[insert OSRL Initial Notification Form when printing]



**FORM 6b**

[insert OSRL Mobilisation Activation Form  when printing]



## FORM 7

[insert RPS Response Oil Spill Trajectory Modelling Request form when printing]



**FORM 8**

**[insert Aerial Surveillance Observer Log when printing]**



## APPENDIX C – 7 QUESTIONS OF SPILL ASSESSMENT

<p><b>WHAT IS IT?</b>                  Oil Type/name                  Oil properties                  Specific gravity / viscosity / pour point /                  asphaltenes/ wax content / boiling point</p>	
<p><b>WHERE IS IT?</b>                  Lat/Long                  Distance and bearing</p>	
<p><b>HOW BIG IS IT?</b>                  Area                  Volume</p>	
<p><b>WHERE IT IS GOING?</b>                  Weather conditions                  Currents and tides</p>	
<p><b>WHAT IS IN THE WAY?</b>                  Resources at risk</p>	
<p><b>WHEN WILL IT GET THERE?</b>                  Weather conditions                  Currents and tides</p>	
<p><b>WHAT'S HAPPENING TO IT?</b>                  Weathering processes</p>	

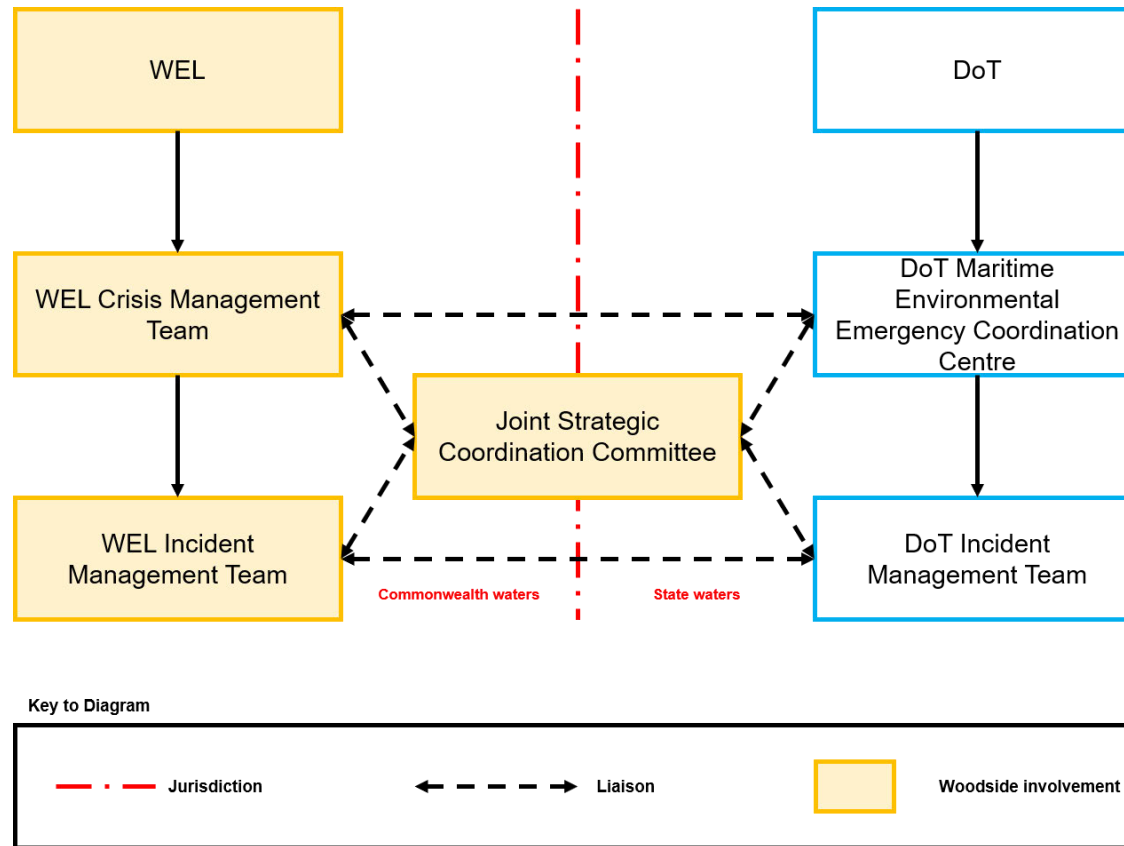
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## APPENDIX D – TRACKING BUOY DEPLOYMENT INSTRUCTIONS

(Insert  when printing)

### APPENDIX E – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/SHORELINES<sup>4</sup>



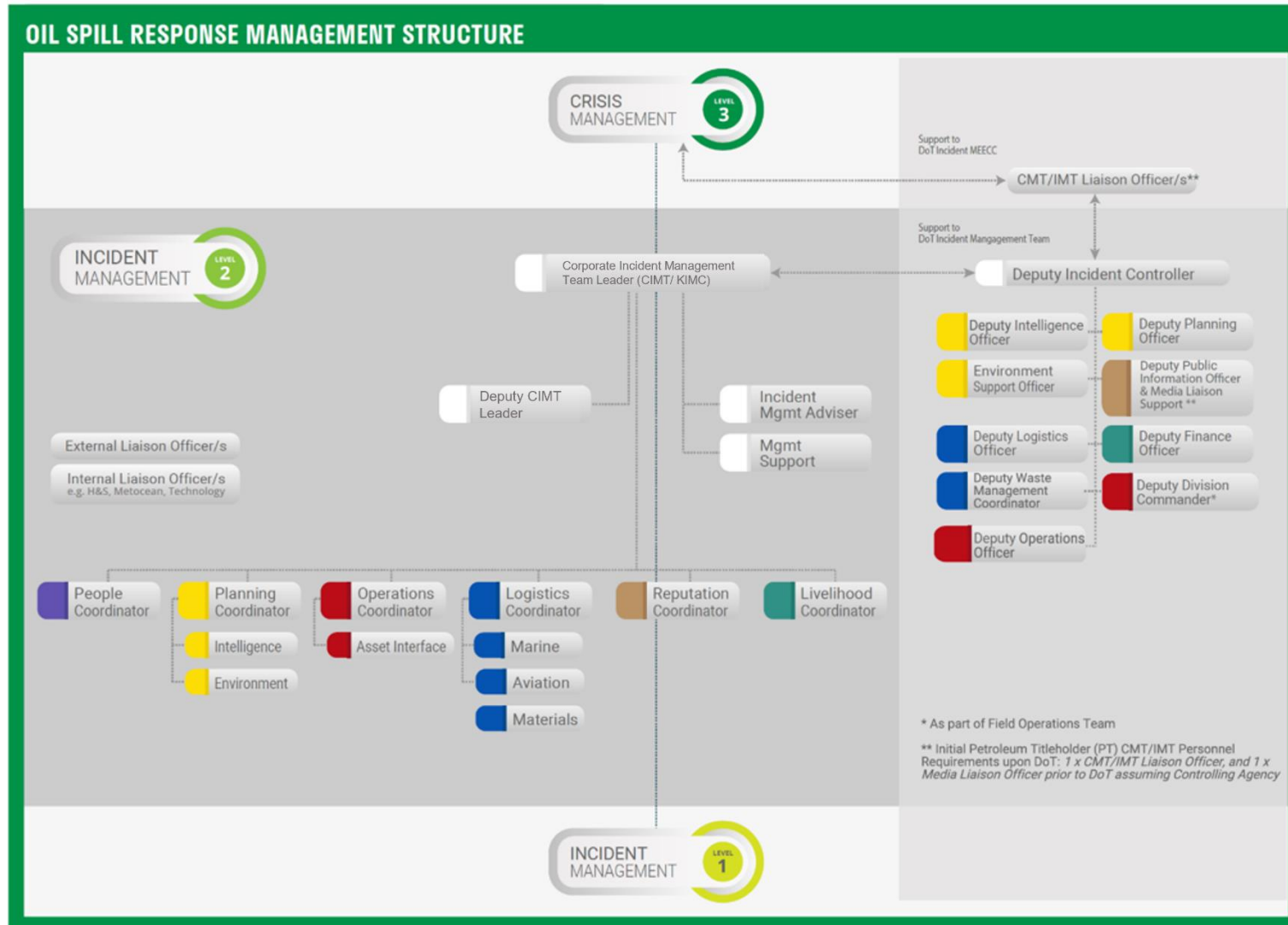
The Control Agency for a hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder). The Control Agency for a hydrocarbon spill in State waters/shorelines resulting from an offshore petroleum activity is DoT. DoT will appoint an Incident Controller and form a separate IMT to only manage the spill within State waters/shorelines.

<sup>4</sup> 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 3.

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## APPENDIX F – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DoT IMT if required).



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## APPENDIX G – WOODSIDE LIASON OFFICER RESOURCES TO DoT

Once DoT activates a State waters/shorelines IMT, Woodside will make available the following roles to DoT.

Area	WEL Liaison Role	Personnel Sourced from <sup>5</sup> :	Key Duties	#
DoT MEECC	CMT Liaison Officer	CIMT Leader Roster	<ul style="list-style-type: none"> <li>Provide a direct liaison between the CMT and the MEECC.</li> <li>Facilitate effective communications and coordination between the CMT Leader and State Marine Pollution Coordinator (SMPC).</li> <li>Offer advice to SMPC on matters pertaining to PT crisis management policies and procedures.</li> </ul>	1
DoT IMT Incident Control	WEL Deputy Incident Controller	CIMT Leader Roster	<ul style="list-style-type: none"> <li>Provide a direct liaison between the PT IMT and DoT IMT.</li> <li>Facilitate effective communications and coordination between the PT IC and the DoT IC.</li> <li>Offer advice to the DoT IC on matters pertaining to PT incident response policies and procedures.</li> <li>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.</li> </ul>	1
DoT IMT Intelligence	Intelligence Support Officer/ Deputy Intelligence Officer	Intelligence Coordinator Roster	<ul style="list-style-type: none"> <li>As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness.</li> <li>Facilitate the provision of relevant modelling and predications from the PT IMT.</li> <li>Assist in the interpretation of modelling and predictions originating from the PT IMT.</li> <li>Facilitate the provision of relevant situation and awareness information originating from the DoT IMT to the PT IMT.</li> <li>Facilitate the provision of relevant mapping from the PT IMT.</li> <li>Assist in the interpretation of mapping originating from the PT IMT.</li> <li>Facilitate the provision of relevant mapping originating from the DoT IMT to the PT IMT.</li> </ul>	1
DoT IMT Intelligence – Environment	Environment Support Officer	Environment Coordinator Roster	<ul style="list-style-type: none"> <li>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.</li> <li>Assist in the interpretation of the PT OPEP and relevant TRP plans.</li> <li>Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the PT IMT.</li> <li>Facilitate the provision of relevant environmental information and advice originating from the DoT IMT to the PT IMT.</li> </ul>	1
DoT IMT	Deputy Planning Officer	Planning Coordinator Roster	<ul style="list-style-type: none"> <li>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.</li> <li>Facilitate the provision of relevant IAP and sub plans from the PT IMT.</li> </ul>	1

<sup>5</sup> 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]

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Area	WEL Liaison Role	Personnel Sourced from <sup>5</sup> :	Key Duties	#
Planning-Plans/ Resources			<ul style="list-style-type: none"> <li>Assist in the interpretation of the PT OPEP from the PT.</li> <li>Assist in the interpretation of the PT IAP and sub plans from the PT IMT.</li> <li>Facilitate the provision of relevant IAP and sub plans originating from the DoT IMT to the PT IMT.</li> <li>Assist in the interpretation of the PT existing resource plans.</li> <li>Facilitate the provision of relevant components of the resource sub plan originating from the DoT IMT to the PT IMT.</li> </ul> <p><b>(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)</b></p>	
DoT IMT Public Information- Media/ Community Engagement	Public Information Support and Media Liaison Officer/ Deputy Public Information Officer	Reputation Coordinator Roster	<ul style="list-style-type: none"> <li>As part of the Public Information Team, provide a direct liaison between the PT Media team and DoT IMT Media team.</li> <li>Facilitate effective communications and coordination between the PT and DoT media teams.</li> <li>Assist in the release of joint media statements and conduct of joint media briefings.</li> <li>Assist in the release of joint information and warnings through the DoT Information and Warnings team.</li> <li>Offer advice to the DoT Media Coordinator on matters pertaining to PT media policies and procedures.</li> <li>Facilitate effective communications and coordination between the PT and DoT Community Liaison teams.</li> <li>Assist in the conduct of joint community briefings and events.</li> <li>Offer advice to the DoT Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures.</li> <li>Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT.</li> </ul>	1
DoT IMT Logistics	Deputy Logistic Officer	Logistics Coordinator Roster	<ul style="list-style-type: none"> <li>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.</li> <li>Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements.</li> <li>Collects Request Forms from DoT to action via PT IMT.</li> </ul> <p><b>(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)</b></p>	1
DoT IMT Finance- Accounts/ Financial Monitoring	Deputy Finance Officer	Livelihood Coordinator Roster	<ul style="list-style-type: none"> <li>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.</li> <li>Facilitate the communication of financial monitoring information to the PT to allow them to track the overall cost of the response.</li> <li>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.</li> </ul>	1

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Area	WEL Liaison Role	Personnel Sourced from <sup>5</sup> :	Key Duties	#
DoT IMT Operations	Deputy Operations Officer	Operations Coordinator Roster	<ul style="list-style-type: none"> <li>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.</li> <li>Facilitate effective communications and coordination between the PT Operations Section and the DoT Operations Section.</li> <li>Offer advice to the DoT Operations Officer on matters pertaining to PT incident response procedures and requirements.</li> <li>Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of PT and DoT response efforts.</li> </ul>	1
DoT IMT Operations – Waste Management	Facilities Support Officer/ Deputy Waste Management Coordinator	Logistics Materials Coordinator Roster	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Collects Request Forms from DoT to action via PT IMT.</li> </ul>	1
DoT FOB Operations Command	Deputy On-Scene Commander/ Deputy Division Commander	CIMT Leader Roster	<ul style="list-style-type: none"> <li>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.</li> <li>Provide a direct liaison between the PT FOB and DoT FOB.</li> <li>Facilitate effective communications and coordination between the PT Division Commander and the DoT Division Commander.</li> <li>Offer advice to the DoT Division Commander on matters pertaining to PT incident response policies and procedures.</li> <li>Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors.</li> <li>Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures.</li> </ul>	1
Total Woodside personnel initially required in DoT IMT				11

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## 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	<ul style="list-style-type: none"> <li>Facilitate effective communications between DoT’s SMPC/ Incident Controller and the Petroleum Titleholder’s appointed CMT Leader / Incident Controller.</li> <li>Provide enhanced situational awareness to DoT of the incident and the potential impact on State waters.</li> <li>Assist in the provision of support from DoT to the Petroleum Titleholder.</li> <li>Facilitate the provision technical advice from DoT to the Petroleum Titleholder Incident Controller as required.</li> </ul>	1
WEL Reputation FST (Media Room)/ Public Information – Media	DoT Media Liaison Officer	DoT	<ul style="list-style-type: none"> <li>Provide a direct liaison between the PT Media team and DoT IMT Media team.</li> <li>Facilitate effective communications and coordination between the PT and DoT media teams.</li> <li>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 &amp; Warnings team.</li> <li>Offer advice to the PT Media Coordinator on matters pertaining to DoT and wider Government media policies and procedures.</li> </ul>	1
Total DoT Personnel Initial Requirement to Woodside				2

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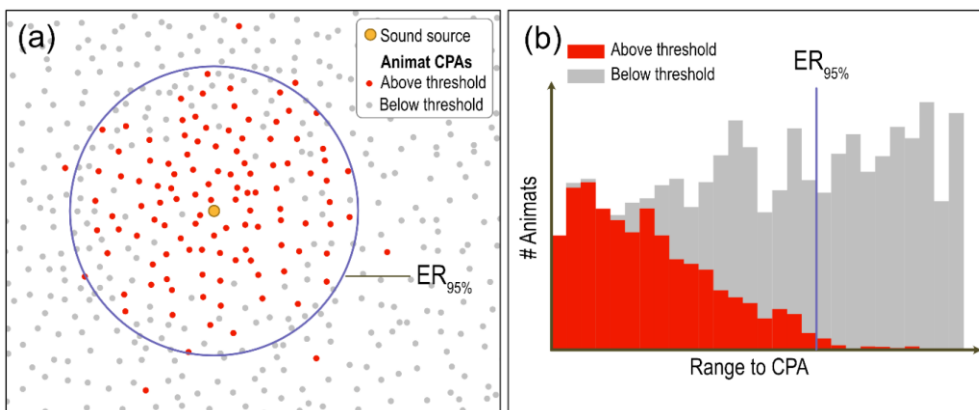
## APPENDIX K JASCO MODELLING SUMMARY

### SUMMARY OF THE JASCO Animal Simulation Model Including Noise Exposure (JASMINE)

The JASCO Animal Simulation Model Including Noise Exposure (JASMINE) was used to predict the exposure of animats (pygmy blue whales) to sound arising from the vessel operations. JASMINE integrates the predicted sound field with biologically meaningful movement rules for pygmy blue whales that results in an exposure history for each animat in the model. In JASMINE, the sound received by the animats is determined by the proposed vessel operations, and animats are programmed to behave like pygmy blue whales that may be present in an area. The parameters used for forecasting realistic behaviours (e.g., diving and foraging depth, swim speed, surface times) are determined and interpreted from marine mammal studies (e.g., tagging studies) where available, or reasonably extrapolated from related or comparable species. An individual animat’s sound exposure levels are summed over a 24-hour duration to determine its total received energy, and then compared to the relevant threshold criteria—which in this case for PTS is 199 dB re 1  $\mu\text{Pa}^2\cdot\text{s}$  and for TTS is 179 dB re 1  $\mu\text{Pa}^2\cdot\text{s}$  (both LF-weighted  $\text{SEL}_{24\text{h}}$  for continuous noise sources). These sound exposure criteria are based on the best data available published in peer-reviewed literature, and represents a conservative, internationally accepted and applied impact evaluation threshold.

In the animat modelling study, a seeding density of two animats per  $\text{km}^2$  was determined to provide sufficient sampling of the model space and statistically reliable exposure range estimates. The simulation was run for a representative period of 24-hours to coincide with the acoustic modelling effort. The modelling results are not related to real-world density estimates for pygmy blue whales within the migration BIA and the number of animals potentially exposed was not calculated. To evaluate PTS, TTS, and behavioural response, exposure results were obtained using detailed behavioural information for migrating pygmy blue whales. The spatial distribution of animats was restricted to the BIA for all assessed scenarios.

The results from the animat modelling provided a way to estimate radial distances to effect thresholds. The distance to the closest point of approach (CPA) for each of the animats was recorded. The  $\text{ER}_{95\%}$  (95% Exposure Range) is the horizontal distance that includes 95% of the animat CPAs that exceeded a given effect threshold (see Figure below). Within the  $\text{ER}_{95\%}$ , there is generally some proportion of animats that do not exceed threshold criteria.



This Figure shows an example distribution of animat closest points of approach (CPAs). Panel (a) shows the horizontal distribution of animats near a sound source. Panel (b) shows the distribution of distances to animat CPAs. The 95% exposure range ( $\text{ER}_{95\%}$ ) is indicated in both panels.

The results of the animal movement modelling predicted that between 11 and 88% of animats within  $\text{ER}_{95\%}$  would be exposed above threshold. The maximum  $\text{ER}_{95\%}$  to  $\text{SEL}_{24\text{h}}$  thresholds was 30 m for TTS (88% probability of exposure) and 10 m for PTS (11% probability of exposure).

The SEL<sub>24h</sub> 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. The radii that correspond to SEL<sub>24h</sub> 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. It is highly unlikely that PTS and TTS thresholds for low-frequency (LF) cetaceans would be exceeded given the small onset PTS and TTS range (10 m and 30 m, respectively). Furthermore, it is not credible given the known movement behaviour of cetaceans including key migrating LF whale species such as pygmy blue whales transiting through the Operational Area.

## **APPENDIX L PROGRAM OF ONGOING ENGAGEMENT WITH TRADITIONAL CUSTODIANS**

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Uncontrolled when printed. Refer to electronic version for most up to date information.

## **Proposed Program of Ongoing Engagement with Traditional Custodians**

This Program of Ongoing Engagement with Traditional Custodians (“Program”) has been developed to demonstrate Woodside’s commitment to ongoing engagement and support of Traditional Custodians’ capacity to care for and manage Country, including Sea Country, and has been directly informed by Traditional Custodians’ feedback regarding their capacity to engage and consult on Environment Plans.

It is a living document designed to evolve with ongoing consultation and feedback from Traditional Custodians and, at a minimum, will be subject to annual review. In addition to this Program, Woodside will continue to participate in, and support collective industry engagement with Traditional Owners on the development of a future, sustainable, industry wide Program. Through the Program, Woodside actively supports Traditional Custodians’ capacity for, and involvement in, ongoing engagement and feedback on environment plans.

The Program has been developed so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the possible consequences of an activity to be carried out under an environment plan on their functions, interests and activities as they relate to cultural values. This feedback will be evaluated in conjunction with Traditional Custodians and, where necessary, avoidance or mitigation strategies in will be developed in collaboration with Traditional Custodians. How the Program is implemented with specific Traditional Custodians will depend on their stated needs and priorities

The Program is underpinned by Woodside’s First Nations Communities Policy ([woodside.com](http://woodside.com)), the objective of which is to ensure Woodside partners and engages with First Nations communities to create positive economic, social and cultural outcomes that leave a lasting legacy. Woodside does this through building respectful relationships and partnerships with First Nations communities where we are active, in the areas where they are most interested in. We acknowledge the unique connection that First Nations communities have to land, waters and the environment. .

The Program will include, as agreed with relevant communities, reasonable commitment to:

### **1. Support for ongoing dialogue and engagement**

Woodside will support the capacity of Traditional Custodians to participate in ongoing dialogue and engagement about the environment plans and to enable the ongoing and future identification of cultural values potentially impacted by Woodside’s activities. Woodside further commits to agreeing consultation protocols with individual Traditional Custodians to ensure the material provided is appropriate in level of detail such that the potential for cultural impact from Woodside activities can be determined and as required measures can be adopted to avoid or minimise impact.

In addition, Woodside will receive feedback on cultural values from an individual person or organisation that identifies as a Traditional Custodian, at any stage during the development and implementation of activities. This feedback will be evaluated, in conjunction with the Traditional Custodian individual or group and if required, control measures will put in place to avoid impacts to cultural values, or where avoidance is not possible, to minimise and mitigate the impacts to an acceptable level.

Where cultural values are identified post activity completion, any controls relevant to value management will be implemented during the next relevant activity.

## **2. Support for the identification and recording of cultural features**

Woodside will support Traditional Custodians to record and articulate their Sea Country values and will invest in cultural assessments codesigned with Traditional Custodians, where required, to inform potential risks to cultural values from our petroleum activities.

This may include supporting cultural mapping by Traditional Custodians to identify and map significant cultural features including archaeological sites and other cultural values. The scoping of the mapping process will be codesigned with Traditional Custodians.

Woodside understands that cultural knowledge remains the intellectual property of Traditional Custodians and will agree with Traditional Custodians at the outset how that information from surveys will be used to feedback into and inform the environment plan's design and implementation.

In addition, Woodside applies the Cultural Heritage Management Procedure 2019, updated in 2023, to the Program which:

- provides a process for the identification, protection, and management of Cultural Heritage taking into account relevant standards, in particular, the United Nations Declaration on the Rights of Indigenous Peoples, the Charter for the Protection and Management of the Archaeological Heritage, the Convention for the Safeguarding of the Intangible Cultural Heritage, and the Convention on the Protection of the Underwater Cultural Heritage;
- applies to underwater cultural heritage and, consistent with current practice, provides for the commissioning of (where appropriate) both archaeological and ethnographic assessments of cultural values over the submerged landscape; and
- the process includes the following:
  - early engagement with relevant Traditional Custodians
  - identification of potential heritage, this could include desktop and field surveys undertaken with the Traditional Custodians.
- the development of cultural management strategies; and, where it is determined cultural heritage may be impacted, the development of Cultural Heritage Management Plans codesigned with Traditional Custodians and implemented by Woodside's First Nations team which:
  - focus on avoidance or minimisation of impacts; and
  - provide regular reviews and for inclusion of new information and further development of the Cultural Heritage Management Plan.

Woodside is committed to continue to receive feedback on cultural values for the life of an environment plan, the inclusion of new information and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians. This information will be recorded via the Woodside Management of Knowledge Process and any potential impacts to the accepted Environment Plan evaluated via the Woodside Management of Change Process.

## **3. Building capacity for the ongoing protection of country**

Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups. This is guided by Woodside's Indigenous Affairs Strategy 2019 ("Strategy"), which is designed to enable the building and maintaining of relationships with Traditional Custodians to leave a lasting legacy, including strengthening of Traditional Custodians' capacity to care for and manage Country, including Sea Country. The Strategy was developed with inputs from Traditional Custodians and contains four pillars that direct Woodside's social investment, policies relating to economic development, procurement and employment, and Woodside's agreement making and implementation of agreements. The pillars are:

1. Culture and Heritage Management: support social outcomes through protection, recognition and respect for culture and heritage;
2. Economic Participation: provide training, jobs, and business opportunities;

3. Capability and capacity: ensure strong corporate governance, leadership development and education initiatives to support self-determination; and
4. Safer and Healthier Communities: partner with Aboriginal people and service providers to maximise safer and healthier community outcomes.

Woodside is committed to an ongoing relationship between Woodside and the Traditional Custodian groups. Through consultation with Traditional Custodians Woodside will continue to:

- establish support for Indigenous ranger programs via social investment;
- establish support for Indigenous oil spill response capability via investigating training models;
- establish support for identification and recording of cultural values and the management of that information by Traditional Custodians;
- establish support for programs identified by the Traditional Custodians as important to them and as agreed by Woodside.

#### **4. Support for capacity and capability in relation to governance**

Pillar 3 of the Indigenous Affairs Strategy 2019 focuses on ensuring strong corporate governance, leadership development and education initiatives to support self-determination. To enable this, Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups, including in relation to governance and management systems.

The nature of this support will be informed by the individual needs of Traditional Custodian groups, but may include:

- funding or other support for community meetings, particularly where consultation with representative bodies lies outside of that body's core business and cultural authority or mandate needs to be secured,
- resourcing internal expertise so that information is managed consistently and internally, including ensuring appropriate record keeping of consultation to provide stakeholders with a lasting record of discussions, and
- development or upgrade of IT systems to manage information.

#### **5. Program Reporting and Review of Effectiveness**

Woodside will undertake an annual review of the Program to assess its effectiveness and adapt the Program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.

Progress of the Program will be reported annually in line with annual sustainability reporting via the Woodside website.

A commitment to the Program will be included in all new and revised Environment Plans in the format below:

Environmental Performance Outcome	Environmental Performance standards	Measurement Criteria
<p><b>EPO 1</b> Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values</p>	<p><b>Applicable to all EPs:</b></p> <p><b>EPS 1.1</b> Implement a program, which is compliant with Corporate Woodside Policies Strategies and procedures, to undertake ongoing consultation with Traditional Custodians whose functions, interests and activities may be affected by the Petroleum Activities Program. The Program will include, where agreed with relevant Traditional Custodians:</p> <ul style="list-style-type: none"> <li>• Social investment to support Indigenous ranger programs</li> <li>• Support for Indigenous oil spill response capabilities</li> <li>• Support for recording Sea Country values</li> <li>• Support to Traditional Custodian groups to build capabilities and capacity with respect to ability to engage with Woodside and the broader O&amp;G industry on activities</li> <li>• Development of ongoing relationships with Traditional Custodian groups</li> <li>• Any other initiatives proposed for the purpose of protecting country including cultural values</li> <li>• Consideration of new cultural values / new information, through the life of the EP, and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified. Where avoidance is not possible, impact minimisation will be prioritised and demonstrated through a written options analysis / ALARP to ensure an acceptable level of impact. This will be documented through Woodside's Management of Change and Management of Knowledge processes.</li> </ul>	<p><b>MC1.1</b> Records demonstrate discussions with relevant Traditional Custodian Groups on proposed partnerships and/or initiatives initiated by Woodside, and responses to feedback provided by Woodside within 4 weeks</p> <p><b>MC 1.2</b> Progress of the Program will be reported in line with annual sustainability reporting via the Woodside website.</p> <p><b>MC 1.3</b> Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified</p>
	<p><b>EPS 1.2</b> Undertake an annual review of the program to determine its effectiveness and adapt the program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.</p>	<p><b>MC 1.4</b> Records demonstrate an annual review of the Program has been undertaken</p>



## 6. Current Status

Following distribution of this proposed Program, Woodside is now participating in a number of specific ongoing consultation activities with Traditional Custodian Relevant Persons. Specific ongoing activities are tabulated below:

Traditional Custodian Relevant Person	Ongoing Consultation Description	Forward Plan	Estimated Timeframes
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	Refer to EP Section 7.5 – Thalanyji Sea Country Management. BTAC proposed a Collaboration Agreement in May 2023, Woodside agreed in principle, and exchanged correspondence to understand details of the proposal. The Collaboration Agreement would enable support for BTAC to undertake an ethnographic assessment to articulate values, and ensure appropriate cost recovery	Refer to EP Section 7.5 – Thalanyji Sea Country Management Woodside and BTAC have executed a Costs Acceptance Letter. Woodside has developed a Collaboration Agreement which is currently under internal Woodside review. Once settled internally it will be put to BBTAC for their consideration.	Refer to EP Section 7.5 – Thalanyji Sea Country Management. The draft Collaboration Agreement will be provided to BTAC for consideration in October 2023. Woodside will follow up on a monthly basis for at least six months with BTAC once they are in receipt of the draft proposed Collaboration Agreement from Woodside, or until the Agreement is in place.
Yamatji Marlpa Aboriginal Corporation (YMAC)	In June 2023, YMAC provided Woodside a proposed draft Framework Agreement, and a proposal to fund in-house expertise to support consultation and implement the Collaboration Framework. In July 2023, Woodside agreed in principle to the proposed Collaboration Framework and the funding proposal and requested a meeting to work together on details. Woodside provided the Proposed Program of Ongoing Consultation to complement the proposed Collaboration Framework.	Woodside will continue to communicate with YMAC, seeking to collaborate and reach agreement on the proposed Collaboration Framework and funding agreement. At the point of EP submission, Woodside is seeking a meeting with YMAC at YMAC's earliest convenience.	Woodside will follow up with YMAC on a monthly basis for at least six months, seeking to progress the Collaboration Framework and funding agreement.
Wirrawandi Aboriginal Corporations (WAC)	In August 2023, WAC proposed a Framework Agreement with Woodside to provide a streamlined, formalised approach to consultation between WAC and Woodside. Woodside has confirmed receipt of the proposed framework from WAC.	Woodside is in contact with the WAC CEO and is currently developing a response to the proposed Framework Agreement put forward by WAC. WAC do not object to Woodside progressing environmental plans on the proviso that both parties enter into an Agreement suitable to each party. WAC have suggested a timeframe to settle the Agreement over the next 2-3 months. Woodside will be aiming to reach agreement within a shorter timeframe.	Ongoing Framework Agreement settled in 2023.
Ngarluma Aboriginal Corporation (NAC)	In September 2023, NAC proposed a Joint Working Group to practically manage consultation processes. It was proposed that the group would meet monthly for 2023 and quarterly thereafter, meetings would include NAC CEO and NAC Directors and potentially independent SME/s, the proposal was that Woodside draft a Framework Agreement, and included a request for funding for this approach. Woodside provided in-principle support for the proposal.	Woodside has provided in-principle support for NAC's proposal and is currently developing a draft Framework Agreement which once settled internally will be sent to NAC for their response.	In accordance with NAC's proposed timeframe, Woodside aims to prepare a draft Framework Agreement, settle internally and then meet to discuss in 2023.

<p>Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)</p>	<p>In a meeting during August 2023, NTGAC proposed a Framework Agreement. This included terms for ongoing engagement such as frequency of consultation, participation, and content. NTGAC has also requested Woodside provide funding for an in-house environmental scientist to review material. Woodside agreed in principle to this approach, and has requested a first draft of the Framework Agreement for consideration. Woodside have agreed to pay for YMAC's in-house scientist to attend NTGAC meetings to advise NTGAC.</p>	<p>Woodside and NTGAC/YMAC have agreed in writing to develop a Framework Agreement. Woodside have been responding to queries from NTGAC who have passed information provided by Woodside onto their Environmental Scientist. Woodside are awaiting a proposed draft of a Framework Agreement and general report. YMAC's preference is to prepare the drafts, Woodside have offered to assist with drafting and remain ready to respond on receipt of documents.</p>	<p>Woodside will follow up with NTGAC on a monthly basis for at least six months, seeking to progress the Framework Agreement and General report.</p>
<p>Yinggarda Aboriginal Corporation (YAC)</p>	<p>In August 2023, YAC requested Woodside provide a draft Framework Agreement for their consideration. Woodside has provided a draft Framework Agreement to YAC for review.</p>	<p>Woodside's Proposal suggests meeting with YAC every 3 months to progress matters. The Proposal suggests committing to work continuing between meetings with each party nominating focal points. A Scope of Work and schedule of rates is included to re-imburse the cost of ongoing consultation. Woodside's Proposal includes timeframes for anticipated milestones and has suggested the Proposal be in place for an initial 2-year period. Woodside has provided the draft Framework Agreement to YAC; they have advised that they will seek direction from the YAC Board on the proposal.</p>	<p>Woodside will continue following up with YAC on a monthly basis for at least six months, seeking to progress the Framework Agreement.</p>
<p>Robe River Kuruma Aboriginal Corporation (RRKAC)</p>	<p>RRKAC have noted that they are insufficiently resourced to engage further and respond to Woodside regarding EPs. Woodside assesses that a Framework Agreement could address this.</p>	<p>Woodside has on several occasions written to RRKAC offering to fund consultation meetings. Woodside will offer RRKAC a Framework Agreement which will propose funding, scope of work and timeframes to assist with consultation and ongoing consultation. If RRKAC are open to the proposal, it is intended to put forward a draft Framework Agreement to RRKAC within the next 2 months.</p>	<p>Woodside will follow up with RRKAC monthly for at least six months, seeking to progress a Framework Agreement.</p>
<p>Ngarluma Yindjibarndi Foundation Limited (NYFL)</p>	<p>NYFL and Woodside have an existing Agreement in place which enables quarterly communication about Woodside activities. NYFL has said they are working with other First Nations organisation and representative Bodies developing a Framework Agreement.</p>	<p>Woodside has not yet seen a draft of the Framework Agreement. Woodside's expectation is that it will outline principles of engagement, details of resourcing, timeframes to meet agreed outcomes etc. Woodside look forward to receiving a draft Agreement and will engage with NYFL to settle on the details of any proposal.</p>	<p>Woodside will continue to follow up monthly with NYFL for at least six months, seeking to progress a Framework Agreement.</p>
<p>Karajarri Traditional Lands Association (KTLA)</p>	<p>KTLA indicated a desire for ongoing engagement and an interest in ranger training for emergency spills, noting they required funding for engagement.</p>	<p>Woodside has indicated in writing and in person their support to fund the reasonable costs of meetings to engage with KTLA. Woodside proposed the suggestion of ranger training to enable them to respond to emergency response to spills. Woodside will develop and forward a draft Framework Agreement for KTLA's consideration within the next 2 months. The Framework Agreement is an effective mechanism for funding to enable ongoing consultation, to set out a scope of work and outline</p>	<p>Woodside will continue to follow up monthly with KTLA for at least six months, seeking to progress a Framework Agreement.</p>

		social investment opportunities such as ranger training.	
Kariyarra Aboriginal Corporation (KAC)	In September 2023 KAC proposed an agreement which would include meeting arrangements, ongoing consultations, specialist advice and contact protocols.	Woodside support funding request that are reasonable and will seek to reach agreement on a funding proposal put forward by KAC. Woodside agrees that a Framework Agreement is a sound tool to set out ongoing consultation with KAC, funding arrangements and social investment opportunities that KAC would want explored. Woodside will propose a first draft of an agreement and put to KAC in the first instance. Woodside will prepare a draft agreement within the next two months to for KAC's consideration.	Woodside will continue to follow up monthly with KAC for at least six months, seeking to progress a Framework Agreement.